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C. H. BECK'SCHE VERLAGSBUCHHANDLUNG  
MÜNCHEN

# PRÄHISTORISCHE BRONZEFUNDE

ABTEILUNG XX · BAND 8

## Metalwork of the Bronze Age in India

by

PAUL YULE

Bonn



C. H. BECK'SCHE VERLAGSBUCHHANDLUNG  
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## FOREWORD

A considerable and still growing body of literature, which began to take form at the beginning of the century, surrounds the study of the earliest use of metal on the Indian subcontinent. If not owing to its imposing volume, then inspite of it, basic aspects of this literature remain obscure and undifferentiated. The inverse proportion of speculation which pervades the study of the metal industry and the plethora of poorly grounded competing explanations, each seeking to clarify its cultural connections, like the heads of the mythical hydra, when chopped off only multiply into others. No other area of Indian archaeology is so controversial, yet so inadequately documented as the non-Harappan of the second millennium B.C. Justification for yet another treatment of the prehistoric or protohistoric metal industry lies in the appearance of a new and dramatically more representative material, the systematic compilation, study and publication of which results in basic changes in our understanding of this all important cultural manifestation. Well over half of the objects catalogued here are unpublished. Moreover, the potpourri of previously published random descriptions, odd-sized sketches and photographs (often without a scale) shed little light on the material, do little to support old theories and even less to bolster new ones.

The findspots of the metal artifacts treated here lie scattered over an area ranging from Maharashtra to West Bengal. The northernmost sites lie in Haryana and the southernmost in Karnataka. Owing to a lack of a full documentation and an adequate typology, extrapolation on the strength of ubiquitous and only general morphological features (e.g. sword midribs and antenna swords) in order to draw cultural-historical conclusions has been a common practice. While explanations of function still remain to some extent subjective, with the help of a typology, they nonetheless can be more objectively grounded.

As in the title, I use the term "Bronze Age" in a sense more diagnostic of the chronology than of the general level of cultural development. Most of the metal finds studied here, particularly the Copper Hoards, seem coeval with, or somewhat later than the neighbouring Harappa Culture, which undisputedly attests the use of arsenic and tin-bronze. Therefore, "Bronze Age" is an appropriate designation for the date of the material treated below.

The overwhelming majority of Indian Chalcolithic metal objects have come to light not during controlled excavations but rather as chance finds. Trained archaeologists often have investigated the circumstances of such discoveries only *post hoc* and doubts linger as to the objectivity of the information which lay informants provide them about a given hoard. Most of the provenances fall under the category of 'said to come from'. Some 289 excavated metal artifacts comprise about one quarter of the total studied; the remaining examples bear no archaeological pedigree in the strictest sense.

I attempted to photograph, weigh, measure, describe and draw all of the relevant material during two campaigns, each of two months duration, in the winter of 1982 and of 1983. The weighing was done with a simple scale having a capacity up to 2100 gm. A 'c.' stands before estimated weights and also for cases in which dimensions have been calculated from a published reproduction, indicating a lesser degree of accuracy. The dimensions given always reflect the maximum measurements. Reference is often made below to the quality of workmanship. The adjectives 'fair', 'good' and 'very good' refer to the degree of finish, regularity of shape and symmetry of a given object. 'Quality' has nothing to do with the state of preservation or subjective appraisals of the aesthetic value.

All reproductions show the obverse; that is, the more convex face and/or the one of which the angles formed in cross section are less acute at the point where the two edges meet the faces. 'Reverse' means the opposite face, presuming that the piece is not bilaterally symmetrical in profile.

In the catalogue the word 'analysed' sometimes appears alone and indicates that a metal sample has been removed from a given piece, for which no metallurgical results are known to me.

The actual recording took place often under less than optimal conditions; at some points the data thus may be incomplete. Omitted below are artifacts which are neither available for study nor published in useable reproductions.<sup>1</sup>

No attempt has been made to render names in various Indian languages in a rigorously consistent way. Instead, the most common spellings have been adopted from the literature.

Information regarding provenance generally derives from the acquisition records of the various museums. In some cases, however, the place of origin may appear written directly on the pieces (particularly the S.C. Roy Collection). Where contradictions between sources occur, the more authoritative, best-documented one has been favoured. The acquisition dates generally appear, when available, in the section on findspots. The provenances of two collections deserve special comment. With few exceptions, all those for the Gurukul Collection in Narela (Hansi, Rewari etc.) reflect the places where objects were purchased. Also, many artifacts in the S.C. Roy Collection are given the nominal provenance "Chota Nagpur, Bihar"; although no specific provenances for them are recorded, Roy's collecting and research activities centred in this area.

Many colleagues generously shared their time and energy to further the present study. Dr. Debala Mitra, Director General of the Archaeological Survey of India, graciously sponsored my work with the Survey. With his usual enthusiasm and no-nonsense manner, J. P. Joshi, Director of the Exploration Branch of the Survey, facilitated my work at the Central Antiquities Collection housed at Purana Qila and put the resources of the Photographic Division at my disposal. Swami Omanand Saraswati kindly provided me with a place to stay at the Kanya Gurukul in Narela, gave information on the provenance of the artifacts stored there and did everything possible to further the study of the Gurukul Collection.

For allowing me to study and record objects in their care and for providing me with information, I am beholden of B. C. Sinha (Archaeological Museum, Gurukul Kangri, Hardwar), Dr. S. B. Deo (Archaeological Museum, Deccan College Postgraduate Institute, Pune), J. G. Mathur and R. P. Sharma (ASI Purana Qila, Delhi), J. C. Harle (Ashmolean Museum, Oxford), O. P. Tandon (Bharat Kala Bhavan, Varanasi), Dr. J. R. Knox (British Museum, London) Drs. Robert Moes and Amy Poster (Brooklyn Museum, New York), Dr. Suraj Bhan (Dept. of Ancient History and Archaeology, Kurukshetra University), Dr. Amita Ray (Dept. of Archaeology, Calcutta University), V. N. Singh (Government Museum and Art Gallery, Chandigarh), Dr. Sunil Roy, S. K. Basu and D. K. Guha (Indian Museum, Calcutta), Virgenand Devakarni (Kanya Gurukul Museum, Narela), Drs. G. C. Pande and R. S. Rana (Kausambi Museum, Allahabad), R. R. Tripathi and S. C. Kalla (Municipal Museum, Allahabad), Dr. H. Härtel (Museum für Ostasiatische Kunst, Berlin), Dr. S. Dietz (National Museum, Copenhagen), I. D. Mathur, Dr. S. Asthana, S. K. Bhattacharya, Dr. S. P. Gupta and L. A. Narain (National Museum, Delhi), E. P. Kelly (National Museum of Ireland, Dublin), Drs. Nagendra Prasad and Hari Kishore Prasad (Patna Museum), S. Gorakshkar and B. V. Shetti (Prince of Wales Museum, Bombay), Mira

<sup>1</sup> See 'Unpublished finds'. Collections not accessible to me include the following: Government Museum, Jaipur; Orissa State Museum, Bhubaneswar; Central Museum, Nagpur; Baripada Museum and the small collection said to be in the

possession of Radha Krishna Agrawal in Lucknow. The metal objects formerly housed in the Government Museum in Jodhpur have been transferred to the Government Museum in Jaipur for study.

Roy (S.C. Roy Collection, Man in India Library, Ranchi), E. Goring (Royal Scottish Museum, Edinburgh), Dr. S.R. Roy and U.C. Dwivedi (State Archaeological Dept. Bihar), Dr. S.C. Mukherjee (State Archaeological Gallery, Calcutta), Dr. R.C. Sharma, Arvind Sahai (State Museum, Lucknow), Dr. D.A. Swallow (University Museum of Archaeology and Anthropology, Cambridge). Dr. S. Eilenberg also allowed me to include his collection.

Other friends provided expert advice and references at points too numerous to mention. Dr. I. Glover referred me to collections which might otherwise have escaped my notice and made his home mine. Dr. M. Thiel-Horstmann proved an inexhaustible source of indological information. Dr. K. Fischer placed his library at my disposal. Dr. W.M. Callewaert allowed me to verify place names with the help of the materials assembled in the *Corpus Geographicum Indiae Antiquae* at the KU in Louvain. M. Bemmman and Dr. J.R. Knox provided citations and other information. S.A. Sali made available unpublished information on the finds from Daimabad. Errors in fact or in interpretation are mine alone.

Finally, I am obliged to Dr. H. Müller-Karpe, without whose patience this study would neither have been begun nor seen its end. The work was made possible by grants from the German Research Society (DFG), Commission for General and Comparative Archaeology (KAVA) of the German Institute of Archaeology and by private donations.

After bringing the manuscript to an end, only in isolated instances was it possible to consider literature hitherto unavailable to me. Among the relevant works is the recent article of P.L. Gupta on the Copper Hoards of Chota Nagpur (Gupta, P.L. 1980).

Bonn, June 1983

Paul Yule

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## INTRODUCTION

### STATE OF RESEARCH

Copper harpoons, axe and adze heads, as conspicuous in their large size, weight, fine workmanship and elegant proportions as they are archaeologically speaking elusive, comprise practically the sole remnants of a now mute and long since vanished tradition indigenous to the Indian land of the two rivers, the Ganges-Yamuna doab. Until relatively recently these curious objects, lacking typologically genetic predecessors and descendants as well, formed the mainstay of our knowledge of the metal industry and civilization of the protohistoric period in India. Although the first example discovered (no. 1017) was identified *de facto* as an antiquity in 1822 through its donation to the Asiatic Society of Bengal and its subsequent mention in the Society's Proceedings, it was to take many years before a real awareness of the metal industry and culture of the second millennium<sup>1</sup> manifested itself amongst students of Indian prehistory. In the nineteenth century, when archaeology itself was still in a seminal stage and when a simplistically diffusionist way of thinking was preeminent, the finding of protohistoric Indian metal harpoons in the British Isles caused raised eyebrows, if not some initial confusion.<sup>2</sup> Given the absence of indigenous comparative material in India for what came to be known as the "Copper Hoards", in the early literature often only vaguely similar foreign comparanda (e.g. Irish or Cypriote) were cited,<sup>3</sup> a situation which conditioned later researchers to accept very broad typological parallels in order to draw historical conclusions.

In 1870 at a small village named Gungeria in present day Madhya Pradesh, while tending cattle, two boys stumbled onto a unique hoard composed of some 526 copper and silver objects,<sup>4</sup> the number of which rivals that of any such hoard in Asia (cf. *Plate H*).<sup>5</sup> Gungeria, one of the few finds of which even a few facts are known about the circumstances of discovery, has played a key role in the usual characterization of the Copper Hoards. Despite unfounded suspicions expressed in the local newspapers that the entire deposit represented modern forgeries, Arthur Bloomfield sent several examples off to the Asiatic Society of Bengal at Calcutta, and reports of other hoards soon began to appear in the scientific periodicals of the day.<sup>6</sup> It is perhaps no coincidence that after many Gungeria artifacts reached the British Museum<sup>7</sup> and other European institutions that the Indian Treasure-trove Act was ratified in 1878.<sup>8</sup>

<sup>1</sup> All dates given, if not otherwise indicated, are expressed in years B.C.

<sup>2</sup> Cf. the so-called Norham harpoon (No. 1024) and others picked up near Castle Eden by County Durham (non-evaluable p. 109f.). Shastri, H. 1915, 4 fig. 2.

<sup>3</sup> Smith, V.A. 1905, 229–244; Franks, A.W. 1876, 349–350.

<sup>4</sup> Copper objects 376.02 kg; silver objects 0.93 kg.

<sup>5</sup> In fact, the Gungeria hoard is not the largest one in the world as some have conjectured. Larger hoards are known from Europe and South America. Several deposits containing hundreds of metal objects are known from Rumania. For example, at Șpălnaca II (1000–1200 kg), Vioara de Sus (1100 kg,

5812 metal artifacts) Petrescu-Dimbovița, M. 1978, 113–145. A depot containing 4000 metal axes at Maure-de-Bretagne in Brittany also is known; Briard, J. 1976, 584. Even larger finds have been made in Ecuador. At the Depósito El Retiro 13,000 metal axes were found in a single grave; Holm, O. 1978, 347–361 esp. 359. E.F. Mayer, who is preparing a corpus of all early South American metal finds, drew my attention to some of the above-mentioned hoards.

<sup>6</sup> Bloomfield, A. c. 1890, 5–6.

<sup>7</sup> These they are registered as bequests of Franks, the director of the Museum at that time.

<sup>8</sup> Sarkar, H. 1981, 2.

Even if the first find notice, that of Gungeria, was not prepared with the thoroughness that one would expect from a professional archaeologist, one must be grateful that by chance it was reported at all, inasmuch as ample cases are known of hoards which were simply converted back into raw material and reused. Bloomfield observed that in the Gungeria hoard neither a system of identical nor progressive weights could be discerned, which weakened a postulated interpretation for the finds as artifact currency.<sup>9</sup> No two objects were made in the same mould and with few exceptions, the copper implements occurred in new condition, without traces of wear.

V.A. Smith published the first major summary on the Copper Hoards with usable reproductions in 1905.<sup>10</sup> The linking of the epicentre of the Hoards with the doab became fixed, although Smith subsumed with these metal objects others from distant Baluchistan and Sind which later proved peripheral in terms of their cultural connections. On the other hand, he published several hitherto unknown axe heads and harpoons, offered preliminary observations as to their typology and speculated on their function respectively, as hoes and riverine hunting weapons.

In 1936 R. von Heine-Geldern raised the discussion of the Hoards from what amounted to one of local antiquarian interest to an ethnic issue with global implications.<sup>11</sup> Briefly, by means of assembling certain metal axes into types, he defined a broad cultural horizon at the end of the second millennium (1200–1000) stretching from Europe as far east as the doab which he saw as indicative of the Indo-Aryan incursion into India. Several excavation sites, having fallen to the scholar's pen, were redated accordingly, usually sacrificing a dating based wholistically on several criteria for one resting on a theoretical dating for "Indo-Aryan" lugged axes and shaft-hole adzes. In this way the dating of Tepe Hisar IIIc, for example, was lowered from the early second millennium to 1250.<sup>12</sup> By defining the Copper Hoard assemblage broadly as to include practically any non-Harappan metal object to the west of the subcontinent in Pakistan, typologically only nominally related artifacts were turned to advantage as documents of the route used by the Aryan invaders on their way southeast. Overly-interpreted typological considerations became proof of cultural intercourse between northern India and the northern Caucasus. Heine-Geldern's thesis was enthusiastically received – it offered the advantage of simplicity and at the same time accounted for broad passages of prehistory ranging from East to West.

In the wake of the publication of the excavations in the Indus valley, attention focussed increasingly in the 1940's on the Harappan Culture, which was thought to centre in the Indus plains. We now know this picture to be overly simplified and more than 300 Harappan sites have been tallied in present day India. Through no great stretch of the imagination, Copper Hoard artifacts could at that time be interpreted as derivative of the distant, apparently monolithic Harappa Culture. This theory also served to explain the developed appearance of Hoard objects from an area without the cultural prerequisites for a metalworking industry. Such considerations lead S. Piggott to characterize the Copper Hoard people as food-gathering tribesmen with an economy centred on fish-spearing<sup>13</sup> and later (in the idiom of the late 1940's) as "... refugees and displaced persons ..." from the Punjab and the Indus valley.<sup>14</sup>

Writing at a time when the Hoards still were practically the sole metal finds of the protohistoric peri-

<sup>9</sup> Bloomfield, A. 1870, 131–134. On artifact currency see K. Regling 1926; Easby, D. T. et al. 1967; Holm, O. 1978.

<sup>10</sup> An entire series of relevant notes appeared previously in the publications of the Asiatic Society of Bengal throughout the 1870's and 1880's. Smith, V. A. 1905.

<sup>11</sup> von Heine-Geldern, R. 1936, 83–113.

<sup>12</sup> Schmidt placed the IIIC phase in the first half of the second millennium (Schmidt, E. F. 1933, 390). Modern research

with the aid of <sup>14</sup>C determinations puts it at around the mid nineteenth century B.C. Bovington, C. H. et al. 1974, 195–199. The equation of the Hoard folk with the Aryans is even more difficult when one considers that according to Vedic sources the latter hardly penetrated beyond the Yamuna (Yule, P./M. Thiel-Horstmann [in press]).

<sup>13</sup> Piggott, S. 1944, 173–182.

<sup>14</sup> Idem. 1950, 238.

od in India, in a classic article, B. B. Lal summed up the current knowledge and published 35 Hoard objects in the best drawings to date from a dozen findspots in the doab.<sup>15</sup> He recast the characterization of the Hoards by means of a new typology in addition to weeding out extraneous types from the discussion such as the well known 'Shalozan' and 'Fort Munro' metal objects from western Punjab.<sup>16</sup> The diagnostic metallic leitforms which remained were shouldered axes, bar celts, rings, harpoons, antenna swords and anthropomorphic figures. Lal also seized the opportunity to test archaeologically three sites, two of which were known to have yielded hoards.<sup>17</sup> He discovered curious thin deposits which contained small numbers of sherds in a characteristic ill-fired, wheel-turned ware with a fugitive ochre powdery surface (OCP), remains of which seemed to have been associated in the doab with the Hoards. At Hastinapur, excavated in 1950-52, between the virgin soil and strata containing Iron Age Painted Grey Ware (PGW), lay an OCP deposit which varied in thickness between 15 and 30 cm, and which at points faded out gradually. Significant for gauging the date of OCP was the observation that it definitely predated the better known PGW. But as long as this stratigraphic superimposition was demonstrable only at a single site, doubts remained as to the dating and even the existence of OCP.<sup>18</sup> OCP is associated with settlements, but this is not necessarily true of the Copper Hoards. Yet the cultural association of the two seems more than likely. Shifting the emphasis from the question of ultimate origins to that of actual identity, Lal also raised the question, whether the authors of the Hoards possibly were not related to the later inhabitants of the area, i.e. the Proto-Australoid Mundas, the Santals and other tribes. Dark-skinned, short of stature and with flat noses, these tribesmen conceivably are the latter day successors of the Nishadas described in the Vedas, who the invading Aryans encountered on reaching the plains of the northern part of the subcontinent.

Difficult to substantiate is Lal's theory that 'Neolithic' bar celts in stone, which resemble metallic bar celts and bar celt-ingots from Madhya Pradesh and eastern Chota Nagpur, are the prototypes of the pre- or non-Aryan Copper Hoards.<sup>19</sup> But if his chronology were correct one could assume a stone age antiquity for the Hoard folk in the Chota Nagpur area.

Lal reaffirmed the notion that an 'archaic' cave painting from southeastern Uttar Pradesh<sup>20</sup> depicts the hunt of a rhinoceros by means of Copper Hoard harpoons; but this hypothesis is tenuous owing to the cursory rendering of the depiction. Moreover, the chronology of such paintings is even more uncertain than that of the Hoards, which with ease compromises any relevance this representation might possess as a chronological anchor point. On the one hand, true harpoons, as opposed to barbed spears, are generally used for aquatic game and, on the other, the relevant cave paintings can be and have been assigned dates all the way from the Mesolithic age<sup>21</sup> to as late as 1000 A.D.<sup>22</sup> Khatri notes the "stratigraphic" association of microliths made from bottle glass with rock paintings which could even further lower their dating.

<sup>15</sup> Lal, B. B. 1951, 20-39.

<sup>16</sup> Ibid; Müller-Karpe, H. 1980 pl. 562D, E.

<sup>17</sup> Rajpur Parsu and Bisauli. Hastinapur previously had not yielded Hoard objects.

<sup>18</sup> Indeed the editors and authors of Indian Archaeology – A Review, for example, showed an indifference to or non-acceptance of OCP until it became better known over 10 years later from excavations at Atranji khara.

<sup>19</sup> Except on the most nominal level a nomothetic and linear Darwinian development from stone to metal artifacts even in archaeologically well-documented areas cannot be demon-

strated. Moreover, most protohistoric sites in India and elsewhere show developed lithic industries. The stone bar celt-ingots could simply be the poor man's version of this artifact.

<sup>20</sup> For example, Ghormangur, Dist. Mirzapur, U.P. – Cockburn was the first who made the association between the cave paintings and the harpoons of the Copper Hoards. Cockburn, J. 1883, 53-64. As to the ancient distribution of the rhinoceros in India, little specific is known. Cf. Clason, A. T. 1974 and 1979 (infra 104).

<sup>21</sup> Wakankar, V. S./R. R. Brooks 1976, 22.

<sup>22</sup> Khatri, A. P. 1969, 766-767; Gordon, D. H. 1939.

Till the 1950's the protohistoric metalwork of India in general meant the Copper Hoards, but soon afterward the picture became more complex with the discovery of Harappan settlements by Sir Aurel Stein and others to the east and south of the Indus plain.<sup>23</sup> As this culture slowly 'expanded', ultimately spreading as far east as the doab, our understanding of its acculturative role on local, lesser known ones became increasingly complex. Running apace with these developments and under the able leadership of H. D. Sankalia and his colleagues in Pune, a series of excavations was carried out and published which put the study of Bronze Age India in the western part of the subcontinent on a much sounder footing. Prior to this a pattern of Iron Age megalithic graves resting atop Stone Age microlithic remains represented the epoch and most of the pre-Iron Age material was unstratified.

As time goes on our understanding of the Bronze Age civilization of India grows more complicated with the discovery of numerous local cultures which are difficult to link to one another either chronologically or chorologically. The unclarity grows each year with the redefinition, renaming and reclassification of already known cultures and with the introduction of new preliminarily published ones. In practice these 'cultures' are often little more than a particular pottery fabric, decoration or style. Many such cultures are difficult to understand as they are known almost exclusively from preliminary reports with few or no reproductions, from impressionistic descriptions or from hopelessly general typological categories (shouldered celts, black and red ware!).

Returning to the Copper Hoards, S. P. Gupta divided them into an eastern group of "simpler" objects and a northern group of more "complex" ones (swords, harpoons etc.).<sup>24</sup> He argues for a migration of the creators from the east to the north, explaining the typological and technical differences of the two assemblages as a function of chronology. That a given class of artifacts may undergo a development over time is clear, but there is little reason to believe that this diverse unstratified material demonstrates a development from plain to elaborate when the development need neither necessarily exist, be linear nor need move in the direction prescribed.

D. P. Agrawal and his colleagues have concentrated on another area, namely metallurgical and metallographic studies.<sup>25</sup> Their goal is by means of an analysis of the percentages of elements and presence of trace elements contained in the metals to determine the place of origin of the ore, to determine whether alloying was practiced and to find out the methods of manufacture. Significantly, although harpoons and other Hoards objects often show high quality craftsmanship, Agrawal's team found no evidence of a correspondingly advanced technology through alloying with tin. Their results contradict others which indicate that Hoard artifacts may have a high tin content.<sup>26</sup> By correlating the existing trace elements in the artifacts from Chota Nagpur with those of ores from the Rakha mine in Bihar, Agrawal concludes that the ores were locally obtained.

In 1971 the Indian Archaeological Society attacked the problem of the Copper Hoards from yet another quarter in the form of an important colloquium with the theme 'OCP and NBP'.<sup>27</sup> Some new material was published and the general effect of the meeting was to force many experts to express their

<sup>23</sup> Stein, M. A. 1943.

<sup>24</sup> Gupta, S. P. 1963, 147-166; *idem.* 1965, 1-7. Allchin, B./F. R. Allchin 1982, 255-258 fig. 9, 19. The Allchins' somewhat similar scheme covers all of India and also accounts for metallic artifacts in the South and West. The numerous 'Copper Hoard' artifacts stratified with painted OCP at Ganeshwar will change this picture when published.

<sup>25</sup> Agrawal, D. P. 1971, 186-206; Agrawal, D. P. *et al.* 1974, 14-18; Agrawal, D. P. *et al.* 1978, 41-46; Agrawal, D. P. 1981,

9-18. A major limitation with these studies is that the authors do not always express the compositional proportions in percent, but rather as plus and minus, thus obscuring the difference between true bronze and copper with mere traces of tin.

<sup>26</sup> *Ibid.* Compare the contrast between new and old test results. The unpublished 'Strachey celt' from Jabalpur with its reported 13% tin content awakens doubts as to the correctness of the analysis or the antiquity of the axe in question.

<sup>27</sup> Puratattva 5, 1971-72, 5-104.

opinions openly with regard to the relationship of OCP to the Copper Hoards. Discord became evident with regard to all aspects of the OCP problem.

The ceramic material is scarce and those OCP shapes and motifs which are known, seldom appear reproduced in the literature. For these reasons practically the only criterion for the specialist and non-specialist alike seems the reddish-orange colour of the ware and its abraded appearance.<sup>28</sup> This situation gives rise to highly contrasting interpretations of the cultural connections. Further scepticism as to the actual identity of OCP is awakened by reports of an impossibly wide distribution for a specific single culture extending even as far west as Nasik. Pottery catalogued as OCP and later as Harappan ware raises other doubts.<sup>29</sup> Moreover, some experts consider OCP as simply an expression of the Harappan or Late Harappan Cultures.<sup>30</sup>

Although some OCP deposits have been uncovered in investigations of tell settlements, more often they accidentally are encountered during the course of ploughing, excavation for foundations, canals and the like, submerged beneath flatlands. The rare sherds, when they in fact do appear,<sup>31</sup> are sparsely scattered helter-skelter in the deposit, at no point through their positions revealing ancient floor or ground levels. OCP sites yield so few cultural remains as to be practically unclassifiable as settlements, cemeteries, industrial sites etc. Deposits are neither extensive nor deep (usually under one metre thickness) and merge imperceptibly into virgin soil. Nearly all of the relevant contexts are bereft of habitation debris such as flooring, ash or other materials. Although OCP by no means has been demonstrated to be a satisfactorily definable cultural entity, given the lack of intensively excavated and studied sites, one is forced to use OCP as a *provisorium* in order to refer to the non-metallic cultural assemblage of the doab area.

As a result of the general development of the infrastructure of the prehistoric archaeology of the western subcontinent, brought about largely by the excavations and publications of the Deccan College, the study of early Indian metalwork has received on the whole a major impetus. Even a brief outline of some three decades of this research exceeds the scope possible here. In the second millennium the cultural milieu, which for the time being is practically unknown for the doab, is much better understood in Rajasthan and Maharashtra. In the area of the Banas river, east of the Aravalli range, the Banas Culture dates to the early part of this time. Further south in the Malwa region of Madhya Pradesh the succeeding Malwa and Jorwe Cultures, which spread over all of Maharashtra, fall into the latter part of the second millennium. The recent and unexpected appearance of numerous local Copper Hoard implements in Haryana and in the same area the excavation and study of Baran-eastern Harappan and other local cultures raise with a new urgency the challenge of better defining and explaining the cultures of the second millennium.<sup>32</sup>

Indications exist for a pattern of an essentially highly local development in India and for the independence of the Copper Hoard artifacts in terms of technique and typological considerations from those of the Harappan Culture. The individual character of the different assemblages of metal implements corresponds to some degree to that of the pottery, as shall be discussed below. An area of enquiry which has been relatively neglected is the original use of the Copper Hoard objects in light of their

<sup>28</sup> Cf. Bara. Suraj Bhan Chowdhary 1965, 17; Sharma, Y.D./G.B. Sharma 1982, 71–82.

<sup>29</sup> Gupta, S.P. 1972, 8.

<sup>30</sup> The largest collection stems from the excavation at At-ranji khera with some 10,000 sherds reported. Gaur, R.C. 1969, 95.

<sup>31</sup> Lal, B.B. 1968, 857–863 for a discussion of the problem.

<sup>32</sup> Suraj Bhan 1975; Shaffer, J. 1981; Sharma, Y.D. 1982; Bisht, R.S. 1982.

find circumstances, ethnographic parallels and the study of ancient damage and wear on the artifacts themselves. But pending the publication of the relevant excavation reports, we must await dramatic developments in the study of chronology and still grope for insight into the economic and cultural importance of metal objects.

## FINDSPOTS

For the sake of simplicity, the findspots appear listed alphabetically. The entries are intended simply to give brief basic information and they vary in their rigour with that of the reports upon which they are based. The information ranges from casually reported strayfinds to well-documented stratigraphic investigations.

**Aguibani**, Dist. Midnapur, W.B. (22° 54' N; 87° 21' E). — This village lies some 5 km north of the Garbeta police station. A local agriculturalist reportedly found metal objects here while ploughing his paddy in 1976–77. The hoard included four (three ?) Ia and Ib axe-ingots, 20 bangles and four metal 'cakes' (nos. 351–366).<sup>33</sup> Test digging revealed a deposit of yellowish sandy silt mixed with lateritic pellets, but no identifiable cultural remains.

**Ahar**, Dist. Udaipur, Raj. — The growing city of Udaipur has engulfed the now split and eroded tell of Ahar, the latter which lies about 1 km west of the Udaipur railway station. A culture based on farming, which developed at this site, bears eponymously the same name, but owing to its widespread distribution along the Banas river, also is referred to sometimes as the Banas Culture.<sup>34</sup> The relevant published metal finds derive from the excavation carried out in 1961 mainly on Mound B and published by Sankalia, Deo and Ansari.<sup>35</sup> An earlier excavation also yielded some metal objects.<sup>36</sup>

The mound of Ahar measures some 500 × 270 m. Particularly fortunate is the deep stratification there, no less than 13 m. The Chalcolithic Period I falls into phases a, b and c. Typical of the earliest (Ia) phase are convex-sided bowls in black and red ware,<sup>37</sup> buff and "imitation" buff slipped ware, slipped red ware and metallic wares. Actually seven main wares characterize the Banas Culture of which black and red ware prominently figures. Salient features of phase Ib are the introduction in large quantities of grey ware, red clay vessels decorated with ribs and incised cuts as well as the absence of buff wares. Several copper objects provide a further diagnostic feature of this subphase. Phase Ic has been distinguished by means of the presence of sharply carinated bowls in black and red ware as well as by lustrous red ware, similar to that at Rangpur.<sup>38</sup> Significantly few or altogether absent are the dish-on-stand type and metal objects. Otherwise phase Ia and Ib are closely related in terms of their material culture and Ic less so. Remarkable for the Banas Culture at Ahar is the near total absence of a developed lithic industry although other sites, such as Kayatha, possess a full-fledged blade assemblage.

The dating of the Banas Culture rests on <sup>14</sup>C determinations from Ahar itself<sup>39</sup> as well as those from Kayatha.<sup>40</sup> Although more than 50 sites<sup>41</sup> of this culture are known in the valleys of the Banas and Ber-

<sup>33</sup> Ray, A./A.K. Datta 1978, 60–61; Anon. 1980, 82.

<sup>34</sup> Well summarized in Ansari, Z.D./M.K. Dhavalikar 1971, 343–345. This culture also sometimes goes by the name of the Copper Age Culture.

<sup>35</sup> Sankalia, H.D. et al. 1969. Period II ranges from the Iron Age to the third century B.C. Other earlier excavations there which uncovered metal objects remained undocumented. Anon. 1955, 14.

<sup>36</sup> Anon. 1955, 14.

<sup>37</sup> For this most important, nearly ubiquitous ware see Sankalia, H.D. et al. 1969, 20. 28–29. 88–97. 129–133; Srivastava, K.M. 1971, 372–417.

<sup>38</sup> Rao, S.R. 1963, 60–61, cf. that of Rangpur IIC–III.

<sup>39</sup> Sankalia, H.D. et al. 1969, 5.

<sup>40</sup> Agrawal, D.P. 1982, 276.

<sup>41</sup> Sankalia, H.D. et al. 1969, 219.



ach rivers, thus far excavations have taken place only in Ahar, Gilund (Raj.) and Kayatha. The Banas Culture is identifiable for the first time in a developed form at Kayatha. Also important in order to arrive at a working chronological bracket for the Ahar Culture are elements thereof which are found mixed with a successor, the Malwa Culture at Navdatoli.<sup>42</sup> The <sup>14</sup>C assays from there form further criteria for dating. While a high dating (2000–1400) is possible,<sup>43</sup> a less literal interpretation of the somewhat erratic scatter of determinations results in the short chronology (1500–1200) suggested by the excavators.<sup>44</sup>

**Ambala**, Dist. Ambala, Har. – In this northernmost district of Haryana a fragment of a type II anthropomorph (no. 538) was acquired for the Kanya Gurukul Museum, Narela.

**Andhari**, village, P.S. Majhgaon, Dist. Singhbhum, Bi. – Nothing is known of the find circumstances of the six Ia and Ib variant axe-ingots from this site (nos. 361–366) which came to light in September 1968.<sup>45</sup>

**Bagor**, Dist. Bhilwara, Raj. (25° 21' N; 74° 23' E). – The settlement site of Bagor lies on the bank of the Kothari river, a tributary of the Banas, some 25 km west of the town of Bhilwara. Excavations carried out by V.N. Misra of Deccan College in the late 1960's revealed cultural deposits of some 1.75 m depth which he divided into three phases (I–III). The microlithic industry was well represented in all of the phases. In the second phase metal and handmade pottery appear, and in the third iron tools and wheel made pottery are in evidence.<sup>46</sup> The copper objects included here come from two phase II burials. The associated pottery is not comparable to any other known Chalcolithic ware in India.

The arrowheads from burial no. 5, trench GIII were found lying on and near the left arm of the skeleton. Other grave goods included one large and a few small animal bones as well as two groups of eight clay pots lying near the head and feet. A third arrowhead appeared in burial 2, trench G; near the left arm of the skeleton. Associated offerings include a broken flat blade, an awl (copper), a broken terracotta spindle whirl, a necklace of stone and bone beads as well as two groups of four clay pots. <sup>14</sup>C determinations suggest a dating for phase II in the first third of the third millennium.<sup>47</sup>

**Bahadarabad**, Dist. Saharanpur, U.P. (29° 55' N; 78° 0' E). – While excavating a canal 13 km west of Hardwar, workers came across a cache of objects consisting of copper lance heads, axes, bangles and pottery.<sup>48</sup> Subsequently Y.D. Sharma carried out test excavations here in 1952. Beneath some 6 m of sterile overburden he found a single culture OCP site, ranging from 0.6 to 1.0 m in thickness and consisting largely of water soaked, compact, dark brown clay.<sup>49</sup> While he initially suggested intimate interconnections between the pottery of Bahadarabad and Harappan or Late Harappan wares, later he emphasized its local character within the context of OCP ("Bahadarabad Ware").<sup>50</sup> Between the settlement level and underlying virgin soil in Sharma's southern trench some quartzite flake tools and waste flakes appeared which V.D. Krishnaswami identified as Early to Late Sohan<sup>51</sup> and which are not directly associated with the Hoard material.

**Baharia**, Dist. Shahjahanpur, U.P. – The chance find of a copper sword and a harpoon head at this site, 51 km southeast of the district headquarters of Shahjahanpur led B.B. and V.D. Misra, under the

<sup>42</sup> Ansari, Z.D./M.K. Dhavalikar 1971, 343.

<sup>43</sup> Agrawal, D.P. 1982, 214.

<sup>44</sup> Sankalia, H.D. et al. 1969, 6.

<sup>45</sup> Lal, B.B. 1971, 84. The 6 type Ia and Ib axe-ingots in the Patna Museum are provisionally numbered in chaulk from 1 to 6. They are the only objects so numbered in that collection. They must correspond to the shouldered celts which Lal mentioned.

<sup>46</sup> Misra, V.N. 1970, 221–223.

<sup>47</sup> Ibid. 232.

<sup>48</sup> Lal, B.B. 1953, 71.

<sup>49</sup> Sharma, Y.D. 1972, 39–42.

<sup>50</sup> Ibid. fig. 13–14.

<sup>51</sup> Ibid. 39.



supervision of G. R. Sharma, to dig an area measuring 1.21 m<sup>2</sup>. The spot chosen for excavation was that where the two weapons were said to have been found.<sup>52</sup> At 1 m depth the uppermost of three habitation levels were observed, composed respectively of a hard brownish clay, a pale brownish sandy clay and a dark brown clay merging gradually into the native soil. These levels measured 1.7 m in thickness. The discoverers of the two copper weapons told the excavators that both were found 91 cm below the surface, i.e. above the habitation levels. Aside from the OCP<sup>53</sup> no other accompanying finds were noted.

Near the **Baragunda mine**, Dist. Hazaribagh, Bi. – Nothing is known of the find circumstances of a type III axe-ingot and a type II bangle said to come from a site near this mine, save that they are the sole remnants of a large hoard discovered in the late 1850's.<sup>54</sup>

**Bardugua**, see Borodanga

**Bargaon**, Dist. Saharanpur, U. P. – 24 km north of the district headquarters, Bargaon lies on a bank of the river Maskara, a tributary of the Yamuna. M. N. Deshpande uncovered a painted pottery which he considered to be of definite Harappan manufacture.<sup>55</sup> But in the preliminary reports he notes the occurrence of "... some pots where the slip peeled off like the OCP", a chert blade, two copper bangles, one of which was broken and a fragmentary chisel (cf. nos. 237, 238). These materials reportedly occurred stratified together.<sup>56</sup>

**Bargunda**, see Baragunda

Near **Bartola**, P. S. Bassia, Dist. Ranchi, Bi. – J. Coggin Brown discusses two hoards from here. The first consists of two "copper celts" (axe-ingots) which are all that remain of a find of 21 similar implements.<sup>57</sup> The second is comprised of two axe-ingots (infra 106). The inventory book of the Patna Museum records 13 such objects which belong to the first or second group (our nos. 369–381). Associated examples transferred to the State Museum Lucknow and University Museum in Cambridge still bear the numbers painted on them while in the Patna Museum.

**Bendarkala**, Dist. Hardoi, U. P. – In 1982 the State Museum in Lucknow acquired a unique harpoon reportedly from this site (no. 1040).

**Bhagra Pir**, Dist. Mayurbhanj, Or. – This site lies about 30 km east of Baripada. Ten type I double axes were accidentally uncovered here by locals on the banks of the Gulpha some 30 cm beneath the surface.<sup>58</sup> No other finds were reported. Three of the double axes are stored in the Patna Museum and State Museum Lucknow (respectively nos. 382, 383 and 384).

**Bhaktabundh**, Dist. Bankura, W. B. (23° 27' N; 87° 5' E).<sup>59</sup> This site lies on the southern bank of the Sali river, about 25 km northeast of the town of Bankura. Nothing is known of the find circumstances of the two axe-ingots and a fragment of a bar celt-ingot which derive from here (nos. 385–387) except that they came to light in 1976.

**Bhiwani**, Dist. Bhiwani, Har. – In recent years three axes (nos. 590, 680, 714 of the IIIa, IIIe and IVb types) were acquired at this town for the Kanya Gurukul Museum in Narela.

**Bichna**, see Harra Chowra Darh

**Bisauli**, tehsil headquarters, Dist. Badaun, U. P. (28° 18' N; 78° 56' E). – Type I and II anthropomorphs, a type IVa flat axe and a type II harpoon are said to come from this site (nos. 239–243). Except

<sup>52</sup> Sharma, G. R. 1972, 42–43.

<sup>53</sup> Ibid. fig. 16.

<sup>54</sup> Foote, R. 1916, 164. 208.

<sup>55</sup> Deshpande, M. N. 1972, 6 fig. 3. 4.

<sup>56</sup> Deshpande, M. N. et al. 1967, 56–57.

<sup>57</sup> Brown, J. Coggin 1915, 127. These probably were those recovered by S. C. Roy and which subsequently passed into his collection.

<sup>58</sup> Idem. 1916, 386–387; infra 107.

<sup>59</sup> Anon. 1980a, 82; Ray, A./A. K. Datta 1978, 61.

for one, these objects were accessioned by the Bharat Kala Bhavan in 1936–37. In 1949 B.B. Lal carried out trial excavations at Bisauli and uncovered a thin (c. 30 cm thick) deposit of OCP.<sup>60</sup>

**Bithur**, Dist. Kanpur, U.P. (26° 37' N; 80° 19' E). – This town is situated on the southern bank of the Ganges, some 19 km northwest of Kanpur. Bithur is often given as a provenance for Copper Hoard objects found in the vicinity, usually under obscure circumstances.<sup>61</sup> Various groups of Hoard objects were published in 1822,<sup>62</sup> 1905,<sup>63</sup> 1915<sup>64</sup> and 1951<sup>65</sup>. In all cases the objects were collected from the Bithur area or are on deposit in temples located there; their exact provenances are unknown.

Type IIIa axes are particularly common, but other kinds of artifacts occur also. These include type II, IIIc, IVe, Va and miscellaneous axes, a chisel, harpoons (types I, II, miscellaneous), a type II sword and a clump of metal.

**Borodanga**, P.S. Chakulia, Dist. Singhbhum, Bi. – In August 1963 a resident of Bardugua<sup>66</sup> brought three type Ib axe-ingots to the police at Chakulia (nos. 388–390) which he found while digging a canal. There they remained for some time until they were accessioned by the Patna Museum.

**Brahmagiri**, Taluk Molakamuru, Dist. Chitaldrug, Kar. – At the Isila town site of Brahmagiri trenches numbered 17, 21, 22 and 23 revealed Neolithic remains, best known from burials.<sup>67</sup> Two phases (Ia and Ib) were stratigraphically distinguishable. The burials are neither intramural nor occur in cemeteries in the usual sense, but rather are isolated. A bronze rod (no. 4) and two small pots were the sole accompanying objects which occurred in one such Ib burial, of the 18 recovered.

Particularly characteristic of the Neolithic settlement are polished pointed butt axes of trap rock, some earlier examples of which are distinguishable by a flattened section but a lenticular one is normal. Stratigraphically associated finds include numerous crude microliths of jasper, flint, agate, common opal, rock crystal, amongst which very rare or entirely absent were specialized types such as trapezoidal, triangular or crescentic forms.<sup>68</sup> The entire assemblage is similar to contemporary finds from Piklihal and Maski.<sup>69</sup> Most recently the Allchins have indicated a dating between c. 2100 and c. 1700 on the strength of <sup>14</sup>C for the upper Neolithic of the area.<sup>70</sup>

**Chakulia**, see Borodanga

Near **Chandausi**, Dist. Moradabad, U.P. – A type II anthropomorph and antenna swords (cf. nos. 537 and 1050) are said to have derived from this site evidently during the late 1960's.<sup>71</sup>

**Chandoli** (Chandoli Khurd), Taluk Ambegaon, Dist. Pune, Mah. – This site lies nearly 5 km east of Manchar on the Ghod river. Deo and Ansari, the excavators of Chandoli, report two undisturbed levels in the settlement measuring some 1.5 m in depth. The bulk of the settlement debris belongs to the lower one, about a metre in thickness and designated Layer 2. Both levels contained unpainted black and red ware,<sup>72</sup> Malwa Ware, cream slipped ware and Jorwe Ware.<sup>73</sup> The relative datings of these wares are supported by their stratified occurrences at neighbouring Nasik, Nevasa, Daimabad, Jorwe etc. Numerous <sup>14</sup>C determinations give further indication of the dating.<sup>74</sup> Jorwe Ware dominated in

<sup>60</sup> Lal, B.B. 1953, 93.

<sup>61</sup> Führer, A. 1891, 168, "... numbers of ancient metal arrow points ..."

<sup>62</sup> Anon. 1822.

<sup>63</sup> Smith, V.A. 1905, 232; idem. 1907.

<sup>64</sup> Shastri, H. 1915.

<sup>65</sup> Lal, B.B. 1951, 24.

<sup>66</sup> Anon. 1975a; The Indian Nation 18 Oct. 1966, 3. I am grateful to Prof. Christian de Brouer of Ranchi for pointing out this article to me. The name Borodanga is entered in the inventory book of the Patna Museum.

<sup>67</sup> Wheeler, R.E.M. 1948, 199–203. 333 pl. 73.

<sup>68</sup> Ibid. 202.

<sup>69</sup> Allchin, F.R. 1960, 123–124.

<sup>70</sup> Allchin, B./F.R. Allchin 1982, 286; cf. Leshnik, L. 1974, 24, who used a lower dating.

<sup>71</sup> Anon. 1975 81; Gupta, P.L. 1980, 312.

<sup>72</sup> The black and red ware is not, strictly speaking, comparable with that of Navdatoli as it is unpainted and of a much coarser fabric.

<sup>73</sup> Deo, S.B./Z.D. Ansari 1965, 24.

<sup>74</sup> Most recently, Agrawal, D.P. 1982, 270–279.

quantity over the Malwa pottery, the former comprising as much as 37% of the entire ceramic material.

Despite the local character of the Chandoli pottery, specific wares are linked to those of other sites, particularly from Navdatoli and Nevasa. The inferior quality of the cream slipped ware and the quantitative dominance of the Jorwe Ware suggests a dating for Chandoli contemporary with the later Chalcolithic phases at Navdatoli (phases III, IV), which are well-known from large scale horizontal excavations. But on the other hand, the absence of the cream-slipped ware at Nevasa and its occurrence in Navdatoli I and II in effect speak for a higher dating for Chandoli. Thus this site may be placed somewhat later than the early phases of Navdatoli and perhaps a little earlier than Nevasa. A comparison with the ceramic of late Navdatoli, for which <sup>14</sup>C assays exist, results in a provisional dating at around 1450–1400.<sup>75</sup>

**Chatla**, P. S. Egra, Dist. Midnapur, W. B. – In 1965 a type Ib variant axe-ingot came to light in a pad-dy of Sri Trailokya Tela at the village of Chatla (no. 830).<sup>76</sup> No further information is known of the find circumstances.

**Chirand**, Dist. Saran, Bi. – This imposing mound measures some 640 × 1600 m and reaches nearly 14 m in height. It lies at the confluence of the Ganges, Ghogra and Sarayu rivers. In the course of two campaigns carried out in 1969–71 B. S. Verma of the Department of Archaeology and Museums Bihar uncovered a curled copper rod in a layer assigned to the second period. Sandwiched between Neolithic and Iron Age remains, Period II is represented by red, grey and black and red wares.<sup>77</sup>

**Chota Nagpur region**, southern Bihar, northern Orissa, western West Bengal and northeastern Madhya Pradesh. – Many finds from these highlands lay in museums in Patna, Ranchi and Cambridge. The vast majority were assembled through the agency of a single man, S. C. Roy, who conducted much of his work in the Ranchi district from the late 1890's till his death in 1942.

**Dadari**, Dist. Bhiwani, Har. A type IIIa axe (no. 605) was secured here for the Kanya Gurukul Museum in Narela in recent years.

**Daimabad**, Taluk Shirampur, Dist. Ahmednagar, Mah. (19° 31' N; 74° 41' E). – This key site lies on the northern (left) bank of the Pravara, a tributary of the Godavari river. Encompassing an area of some 30 hectares (roughly 600 × 500 m) and with cultural accumulations over 6 m in depth, Daimabad is not only a significant site, but is one of the largest in Maharashtra. B. P. Bopardikar discovered Daimabad in 1958 and in 1959 M. N. Deshpande conducted limited investigations there. The accidental discovery of four extraordinary metal sculptures (nos. 36–39) in June of 1974 by some Bhils in search of firewood impelled the resumption of the investigations. Initially under the direction of M. N. Deshpande and S. R. Rao, an attempt was made to establish the cultural connections of the sculptures. S. A. Sali carried out later campaigns from 1976 to 1979.<sup>78</sup>

The later excavators divided Daimabad into sectors I–IV (excluding the Neolithic and medieval areas). Initially, particular attention was paid to sector III, in which the sculptures were said to have appeared.

The earliest remains show affinities with contemporary Neolithic cultures to the south (Brahmagiri, Hallur, Piklihal). There are two Neolithic phases, IA and IB. The earlier (IA) is distinguished by the occurrence of burnished grey ware. Some bowls of this ware show post-fired ochre painting on the rim. The identifying pottery of IB, on the other hand, is of a hitherto unknown kind and is characterized by plain horizontal bands, zones of vertical wavy lines, cross-hatched bands, ladder ornament,

<sup>75</sup> Deo, S. B./Z. D. Ansari 1965, 24.

<sup>76</sup> Chakrabarti, D. K. 1975, 293

<sup>77</sup> Verma, B. S. 1974, 6–7.

<sup>78</sup> Deshpande, M. N. 1959; 1979; 1979a; Dhavalikar, M. K. 1970; 1978; Rao, S. R. 1978; 1978a; Sali, S. A. 1981.

slanting dentate bands, V's and stylized antelopes. These decorate red on grey and red wares.<sup>79</sup> The inventory also includes perforated ring stones, ground and polished stone tools, particularly axes and a specialized blade industry.

In the later reports the sequence of cultures was renumbered from I to V, beginning with the Chalcolithic Savalda Ware. This pottery is named after the site in the Tapti valley where it was initially discovered.<sup>80</sup> Characteristic is a tournette-turned medium to coarse fabric covered with a thick slip which varies in colour from brown, chocolate brown, pink to red, and of which the surface appears crackled. The decorative elements include single and double rows of V's, "simple arrows", plants, birds, antenna-ended arrows, groups of fine radiating lines and horizontal bands. Associated finds include blades of chalcedony and copper bangles.

Phase II (Late Harappan) is typified by a distinctive ceramic, a robust black and red ware.<sup>81</sup> Sali considers the sculptures to have come from this horizon.<sup>82</sup> The Late Harappan pottery differs from the Savalda Ware in the composition of the paint, in technique, surface texture, motifs etc. It is reportedly fired at a high temperature, is well-levigated and thrown on a fast wheel. Associated small finds include terracotta spindle whirles, a sharpener, blades of chalcedony and fluted cores. A copper or bronze axe and a gold bead belong to the cultural inventory. The mud brick masonry is comparable with that of Harappan Kalibangan.

Phase III (Buff and Cream Ware Culture) shows a sharp contrast with the cultural remains of the second phase. Most conspicuous are black paint on cream and buff-coloured wares, similar in the fabric, surface treatment and repertoire of motifs to black painted red Malwa Wares (cf. Prakash IA and Bahal IB).<sup>83</sup> This wheel-thrown ceramic is mostly medium grained with a light brick red core which lapses into grey and black. Typical are lattice patterns, rows of cross-hatched diamonds interspersed between horizontal bands, cross-hatched elongated triangles and ovals, symmetrically opposed loops and horizontal bands on the rim, neck as well as the shoulder. Particular jars, bellied vases, cups and bowls bear these motifs. Characteristic small finds include a spindle whirl, chalcedony blades and some bone points.

Typical Malwa Ware distinguishes Phase IV. Purplish to brown-black paint is applied to superior buff or cream-slipped orange, grey, coarse grey and coarse red wares. A few vessels in this ware were treated with a grey slip. The designs consist of horizontal bands, hatched diamonds, zones of dentate lines, crosshatched lines and thick vertical strokes between horizontal bands. Specialized chalcedony blades from Phase IV are similar to those found at other Malwa sites. A large furnace, quantities of lime and charcoal and some copper slag came to light between this and the succeeding phase. Also reported in the dwellings were a thin almond-shaped copper object, perhaps a mirror, a tanged spear-head with midrib, a polished stone axe, bone points and microliths.

Phase V yielded typical black painted Jorwe Ware, burnished grey and thick, coarse, gritty fabric.<sup>84</sup> The decorative repertoire includes geometric, floral, faunal and human motifs. These appear on vases carinated at the neck and with a long spout, carinated footed bowls, high neck jars and cylindrical vases. The grey ware shapes include lids with or without knob, dish on stand, "kunda", base ring dishes and square lamp stands. Characteristic small finds are copper bangles, shells, long chalcedony blades and fluted cores, bone points, querns and clay balls of various sizes.

<sup>79</sup> Idem. 1979a, 29 pl. 23B.

<sup>80</sup> Sali, S.A. 1982 for a more complete description than is possible here. The relative chronology of Savalda ware previously was unknown.

<sup>81</sup> Deshpande, M.D. 1979a, 32 pl. 43B. 44A.

<sup>82</sup> Sali, S.A. 1982, 181; Deshpande, M.N. 1979, 30: At – 1.2 m beneath the surface. Allchin, B./F.R. Allchin 1982, 279 ("Jorwe Period").

<sup>83</sup> Deshpande, M.N. 1979a, pl. 44B.

<sup>84</sup> Deshpande, M.N. 1979, 30 pl. 24; idem. 1979a, 32.

On the basis of comparisons with more southerly sites (Neolithic II), the Neolithic settlement dates to about 2100–1700.<sup>85</sup> The Malwa Culture appears on the strength of <sup>14</sup>C determinations from various sites to lie approximately within the timespan 1700–1400.<sup>86</sup> A further reference for the chronology is provided by <sup>14</sup>C assays for the Jorwe Culture which suggest a dating around 1400–1100 (aside from its very late occurrence at Inamgaon) for this culture. Further radiocarbon datings from Daimabad itself are widely scattered.<sup>87</sup>

**Dargama**, Subdivision Khunti, Dist. Ranchi, Bi. (23° 2' N; 85° 19' E). – While bathing his buffalos, Sham Singh Munda of Dargama discovered five loosely stacked copper axe-ingots, one of which S.C. Roy secured (no. 393).<sup>88</sup>

**Debakia**, Tehsil Patan, Dist. Jabalpur, M.P. – Nothing is known of the find circumstances of the type IVe axe (no. 764) which was found here in 1961–62.<sup>89</sup>

**Deoti**, Tehsil Mohanlalganj, Dist. Lucknow, U.P. – Some time prior to 1951 during the construction of an irrigation canal at Deoti, a fragmentary axe (no. 606) was found. This site subsequently was surveyed in 1978 but yielded no new evidence.<sup>90</sup>

**Dhaka**, P.S. Tilhar, Dist. Shahjahanpur, U.P.<sup>91</sup> – This site lies 10 km south of Tilhar on the right bank of the Sharda canal. No details are recorded of the chance discovery of five type Va axes from here which were acquisitioned by the (now) State Museum Lucknow in February of 1917.

**Dist. Dhanbad** (Dist. Manbhum), Bi. – The Dhanbad district occupies most of the area of the now defunct Manbhum district. Rev. A. Campbell reported some 27 copper “axe-heads” to have been found here of which he acquired 24.<sup>92</sup> All derived from the same area: A low range of hills due east of Paresnath and Pokhuria in the northern part of the Dhanbad subdivision lies to the north of the Barakar river, which forms the border between Dhanbad and Santal Pargana. The finds were made between the river and the hills. In 1913–14 another large hoard was uncovered at a depth of some 30 cm below the surface near the road which connects the village of Kolber to the boundary of the Hazaribagh district. Campbell sent these and his other copper objects to the Bihar and Orissa Research Society. With the help of the inventory book of the Patna Museum some examples are identifiable as having come from Campbell’s activities (cf. nos. 810, 815, 816, 832–834).

**Dist. Mehsana**, Guj. – A group of four type IIb swords (nos. 1055–1057, 1060) were acquired by the National Museum in Delhi in 1970.<sup>93</sup> The find circumstances are unknown, but given the similarity of the swords with each other, as well as their provenance in an area otherwise with few such finds, we may assume that they were part of a single hoard.

**Dist. Palamau**, Bi. – A few axe-ingots and other objects which bear simply this district as provenance came to light during research activities in the early part of the century.<sup>94</sup>

**Dist. Rewa**, M.P. – This district lies some 250 km south of the confluence of the Ganges and Yamuna in an elevated alluvial plain bordering the doab lowlands. Copper artifacts which seem to fit the description of type III axe-ingots reportedly derive from here (infra 108).

**Dunria**, Pal Lahara, Dist. Dhenkanal, Or. – In 1916 a type I axe-ingot was reported here by Babu S.N. Misra, but no details are known of the find circumstances. Prior to 1951 this object passed from

<sup>85</sup> Allchin, B./F.R. Allchin 1982, 286.

<sup>86</sup> Agrawal, D.P. 1982, 234–235.

<sup>87</sup> Sali, S.A. 1982, 179–190.

<sup>88</sup> Roy, S.C. 1915, 239. 242 pl. 3A; idem. 1920, 417 pl. 21.

<sup>89</sup> Trivedi, C.B. 1964, 99.

<sup>90</sup> Lal, B.B. 1951, 29; Kumar, A. 1981, 101.

<sup>91</sup> Ibid. 27.

<sup>92</sup> Campbell, A. 1916, 85–86.

<sup>93</sup> Anon. 1868, 251–252. 268.

<sup>94</sup> Brown, J. Coggin 1915, 125–126.

the Patna Museum into the State Museum Lucknow.<sup>95</sup> Two others from Dunria remained in Patna (cf. nos. 394–396).

**Ekalasimgha**, Dist. Ajmer, Raj. – This site lies a few km away from the Bandi and the Khari rivers on the border of the Bhilwara district. An unpublished axe was reported from here in January of 1979.<sup>96</sup>

**Elana**, Dist. Jalor, Raj. – This site lies on the banks of the Jawai river, a tributary of the Luni. An axe was reported to have been found outside the village in a farmer's field.<sup>97</sup>

**Eran**, Dist. Sagar, M. P. – Located near the Bina river, this settlement site, which is known only from an excavation notice, yielded remains ranging from the Chalcolithic to medieval periods. Period I is typified by black painted red ware, black painted grey ware, terracotta figurines, bangles and a fragmentary copper axe (no. 442).<sup>98</sup>

**Etawah**, P. S. Balua, Dist. Varanasi, U. P. – In 1956 five type Vd axes (nos. 250–254) said to come from this village were acquired by the Bharat Kala Bhavan.<sup>99</sup>

**Fathgarh**, Dist. Farrukhabad, U. P. – Close to the city of Farrukhabad the site of Fathgarh (Fatehgarh) reportedly yielded 13 copper "weapons".<sup>100</sup> Unfortunately no details are known of the discovery. Four type I swords and a miscellaneous anthropomorph from this find are preserved (nos. 255–259).

**Gandhauli**, Dist. Sitapur, U. P. – Dr. N. B. Misra donated 13 axes (types III a, IV a, V c) in 1956 to the State Museum Lucknow (nos. 260–271). Nothing specific is known of their find circumstances aside from the site name given. That these artifacts belong together as a find group is clear for, despite the recent scouring some have undergone, all show a similar patina and are of the same type.

**Ganeshwar**, Dist. Sikar, Raj.<sup>101</sup> From the excavation of this site R. C. Agrawal and his colleagues report having found some 400 arrowheads, 50 fishhooks, numerous chisels, rods, beads, pins, blades, spear heads, balls and 60 flat axes.<sup>102</sup> The find notices which have appeared present only a sketchy and in some ways contradictory picture of the finds and their cultural context. The Ganeshwar Culture has not yet been defined and described systematically and few of the ceramic and metal artifacts already published find close comparisons with objects from better known cultural spheres.

**Giridh**, Dist. Hazaribagh, Bi., see Karharbari

**Gungeria**, Dist. Balaghat, M. P. – This village lies on the old Mair estate about 58 km to the north of Burha, about half way between Mandly and Seoni. "On the morning of the 21st January last year [1870], two boys tending cattle saw sticking up from the ground what appeared to them to be an old piece of iron. They pulled it up and began grubbing up the earth where they had found it, and within a few inches of the surface came upon several other pieces. After this, a regular excavation commenced and 424 pieces of copper, weighing altogether 414½ seers and 102 pieces of silver weighing 80½ tola were exhumed."<sup>103</sup> The hole from which the objects were retrieved was only about 3 m square and slightly over 1 m deep. "The copper pieces when found were arranged carefully, the larger pieces being in alternate transverse layers, and the others in regular order one above the other. The silver was found in a lump by the side of the copper, all the plates adhering together, so that at first it looked like a ball of earth."<sup>104</sup> (Cf. nos. 443–531).

Most of the implements evidently had never been used although a few show battered edges and bro-

<sup>95</sup> Lal, B. B. 1951, 29. The name "Dimina Pal Lahera, Dist. Denkanal" was supplied to me for this site in a list prepared from the inventory book of the Patna Museum. P. L. Gupta refers to this find as "Dimiria" (1980, 309).

<sup>96</sup> Agrawal, R. C./V. Kumar 1982, 131; *infra* 108.

<sup>97</sup> *Ibid.*

<sup>98</sup> Bajpai, K. D. 1965, 11.

<sup>99</sup> Ghosh, A. 1956, 61.

<sup>100</sup> Anderson, J. 1883, 405–408

<sup>101</sup> 15 km from the Nimak police station.

<sup>102</sup> Agrawal, R. C. 1981, 79; *idem.* 1981 a, 27; *idem.* 1981 b, 59–63.

<sup>103</sup> Bloomfield, A. 1870, 131–134 pl. 2 *Supra* n. 4.

<sup>104</sup> *Ibid.*

ken corners and other traces of wear and tear. Hardly any two are of the same size, weight or shape. Bloomfield had some (which?) pieces analysed and determined the copper to be nearly pure, containing about one half per cent lead. The silver sampled contained 0.37% gold.<sup>105</sup> Of the artifact types represented, Bloomfield records 90 bar celts, 209 type VII axes and 125 other kinds of axes. Of the silver pieces 39 discs and 63 bucrania were salvaged. Most types common to the doab Hoards (harpoons, bangles etc.) are absent at Gungeria and several of the artifact types are unique to this find.

**Hallur**, Dist. Dharwar, Kar. lies on the left bank of the Tungabhadra river and is the southernmost village in this district.<sup>106</sup> The mound itself lies north of the village. It is much disturbed by medieval building activity and by modern cultivation. Tests made in 1965 revealed Neolithic remains (Period I) with two distinct phases. Above lay an Iron Age deposit (Period II). Hallur is mainly a settlement site, the excavated area of which is not extensive. Period I, Phase II, which produced some metal objects, is characterized by profuse quantities of stone blades, such as are known in Chalcolithic contexts (crested guiding ridges). Also present were polished stone tools in considerable numbers, bone tools and fish hooks. The predominant pottery is a coarse brown and black ware which continued from the preceding phase.

**Hami**, Dist. Palamau, Bi. – Late in 1915 (?) six axe-ingots “. . . similar to those from Bassia . . .”<sup>107</sup> and 17 bar celt-ingots (cf. no. 963) washed out of the bank of a small river near Hami (nos. 402–419). Nothing further is known of their find circumstances.

**Hansi**, Dist. Hissar, Har. – Just over 120 km northwest of Delhi, Hansi lies well outside the doab. Over the last 30 years axes (types I, II, IIIa, IIIe, IVa, IVb), axe-ingots (miscellaneous), a bar and harpoons (type III) have been acquired here by Swami Omanand Saraswati. In terms of type these objects differ considerably from those of the doab.

**Hardi**, Tehsil Sidhauri, Dist. Sitapur, U.P. – The deputy commissioner of Sitapur presented a type IIIa axe (no. 610), the find circumstances of which are unknown,<sup>108</sup> to the State Museum Lucknow in 1924.

**Harra Chowra Darh**, a hill at Bichna (village), Subdivision Khunti, Dist. Ranchi, Bi. – In 1915 S. C. Roy came upon a small axe, a strayfind, for which no further provenance information exists.<sup>109</sup>

**Inamgaon**, Dist. Pune, Mah. – Inamgaon, perhaps the largest Chalcolithic settlement site in Maharashtra, measures some 600 m in diameter and lies on the northern bank of the Ghod river, a tributary of the Bhima. Although known only from preliminary reports, interdisciplinary investigations carried out by H. D. Sankalia and his colleagues fill out the picture of the associated Jorwe and southern Malwa Cultures. Particular attention was paid to the subsistence patterns of the inhabitants as witnessed by their dwellings, furniture, a granary or shrine, a chieftain's house (?) and specialized industries such as copper melting, ivory and gold work.<sup>110</sup>

Inamgaon shows the characteristic pottery, burnishers,<sup>111</sup> parallel bladed and penknife lithics and other typical object types of the Jorwe Culture. It differs however from other Jorwe settlements in that substantial (unpublished) archaeological evidence, supported by <sup>14</sup>C determinations, show a distin-

<sup>105</sup> Ibid.

<sup>106</sup> Nagaraja Rao, M. S. 1971; idem. 1978, 14–15; Allchin, B./F. R. Allchin 1982, 287; Agrawal, D. P./S. Kusumgar 1966, 585–586: A <sup>14</sup>C determination exists for phase II (TF 575) dating to 1030 ± 105 B.C.

<sup>107</sup> Roy, S. C. 1916, 482–483; Lal, B. B. 1951, 38A; Piggott, S. 1944, 182 “Harni”.

<sup>108</sup> Lal, B. B. 1951, 27.

<sup>109</sup> Roy, S. C. 1915, 239. 242 pl. 3b (non-evaluatable, p. 109).

<sup>110</sup> Dhavalikar, M. K. 1976.

<sup>111</sup> Sankalia, H. D. 1974, 508.



guishable early and a late phase. Following the Jorwe Culture proper (1400–1100), which terminates with a destruction, a successor phase continues somewhat on the same cultural pattern until c. 700.

**Indilapur**, P.O. Mundia, Dist. Shahjahanpur, U.P. – This village, 11 km north of Shahjahanpur, yielded a type Va axe (no. 779) which the State Museum of Lucknow purchased in 1944.<sup>112</sup>

**Jabalpur**, Dist. Jabalpur, M.P. – Nothing is known of the circumstances under which the so-called Strachey celt, an axe of unknown type, was acquired here in the mid nineteenth century.<sup>113</sup>

**Jokha**, Dist. Surat, Guj. – Located on the southern bank of the Tapti river, this site measures some 150 × 100 m in breadth and rises 2 m above the surrounding plain. During the course of excavations conducted by R.N. Mehta and his colleagues of the M.S. University of Baroda in the late 1960's, remains were uncovered ranging in date from the Chalcolithic to medieval periods. A fragment of an unidentified copper axe (infra 109) came to light in the earliest levels which were designated Period I. Associated pottery includes Late Harappan, Malwa and Jorwe Wares. Also found in the settlement were etched beads, microlithic cores, flakes, blades, lunates, triangles and trapezes as well as artifacts in terracotta.<sup>114</sup>

**Jorwe**, Dist. Ahmednagar, Mah. (19° 33' N; 74° 17' E). – Jorwe is a small village on the north bank of the Pravara river. It lies some 8 km due east of Sangamner, which is located on the same bank. Investigations conducted there by H.D. Sankalia and S.B. Deo<sup>115</sup> revealed a single culture settlement, the Chalcolithic antiquity of which was demonstrated by the stratigraphic sequence at Nasik and other sites. Diagnostic artifacts of the now well-known Jorwe Culture are mainly ceramic. Also characteristic are parallel-sided penknife lithics and an otherwise highly developed lithic industry.<sup>116</sup>

The Jorwe Culture, distributed over much of Maharashtra, has been the subject of several excavations. The settlements reflect a subsistence economy based on the cultivation of grain and fruit but also on the domestication and hunting of animals. <sup>14</sup>C determinations suggest that the Jorwe Culture lies within the bracket 1400–1100 although at Inamgaon it continues later.

**Kallur**, Dist. Raichur, Kar. – Three type IIa swords, a broken flat axe and a few fragments of copper pins were discovered accidentally under some boulders at this site in the late 1930's (cf. nos. 1052–1054).<sup>117</sup> Further associated finds include polished stone axes and microliths of the ribbon flake type.<sup>118</sup> Recently the primary character of this find context has been disputed.<sup>119</sup>

**Kamalpur**, P.S. Ghausganj, Dist. Hardoi, U.P. – In July of 1911 the local authorities of Kamalpur presented a miscellaneous axe-ingot (no. 922) to the Lucknow Museum.<sup>120</sup> A. Kumar examined the area of the findspot in 1978 and reported sherds there of the OCP type.<sup>121</sup>

**Kamdara**, P.S. Bassia, Dist. Ranchi, Bi. – Three type III axe-ingots in the S.C. Roy Collection (nos. 899–901) bear labels which give this provenance.

**Kankasa**, near Mangrol, Dist. Junagarh, Guj. – A type IIc variant dagger (no. 1061) was uncovered here by an agriculturalist shortly prior to 1979.<sup>122</sup>

Near **Karharbari**, Subdivision Pachamba, Dist. Hazaribagh, Bi. – During the late 1860's a local inhabitant uncovered a hoard of one type I and three type II axe-ingots at an undisclosed site here. The finds appeared about a half metre beneath the surface in a hill which covered an area of some 730–880 square metres. Although the discoverer did not reveal the exact findspot, he described it as surrounded

<sup>112</sup> One km north of the village of Mundia. Lal, B.B. 1951, 29.

<sup>113</sup> Infra 109.

<sup>114</sup> Mehta, R.N. et al. 1971, 9–35; idem. 1975, 10.

<sup>115</sup> Sankalia, H.D./S.B. Deo 1955.

<sup>116</sup> For Jorwe Ware and lithics, *ibid.* 34. 151–152. 160–166.

<sup>117</sup> Anon. 1942, 22–24.

<sup>118</sup> Krishnaswami, V.D. 1953, 71.

<sup>119</sup> Agrawal, D.P. 1982, 208.

<sup>120</sup> Shastri, H. 1915, 4.

<sup>121</sup> Kumar, A. 1981, 101.

<sup>122</sup> Sankalia, H.D. 1980, 163.



by hills larger and smaller than that of the find. J. Anderson cautiously gives only the subdivision for the provenance but in the original notice W. L. Samuells specifies the Karharbari vicinity.<sup>123</sup>

**Katmandu Valley, Nepal.** – A miscellaneous winged axe (no. 798) reportedly came to light from here in the 1970's. No further details of the find are known.

**Kaushaya**, see Kushaya

**Kayatha**, Dist. Ujjain, M. P. (23° 14' N; 76° 2' E). – Kayatha lies some 25 km to the east of Ujjain on the southeast bank of the Choti Kali Sind river, a tributary of the Chambal which itself is a tributary of the Yamuna. There in 1965 V. S. Wakankar of the Vikram University began excavations which later Z. D. Ansari and M. K. Dhavalikar of the Deccan College expanded. This site is known only from preliminary reports.

Five distinct cultural periods were determined at Kayatha, the earliest of which bears the name of the site.<sup>124</sup> Metal finds are known only from the Kayatha levels there and include bangles and peculiar type IIIa variant axes (nos. 106 and 107). The Kayatha Culture is characterized by three different types of pottery (Kayatha Pink Ware, Red Painted Buff Ware and Combed Ware) which have no affinities outside their own cultural sphere. This pottery is also associated with house remains and a specialized lithic industry. Small finds including jewelry permit a picture of a certain prosperity at Kayatha. While there is little evidence for agricultural activity, hunting and animal husbandry are revealed by faunal remains.

All of the metal objects came to light in a house, part of which was uncovered in layer 7 of trench KTH-A. 11 complete and four fragmentary bangles occurred in a small 'lota' pot. Five of these were interlocked with each other. In another part of this trench a similar pot contained eight complete and two fragmentary bangles. The two axes derived from the centre of the house.<sup>125</sup>

Wakankar's explorations have revealed some 40 sites of the Kayatha Culture<sup>126</sup> and despite the fact that of these only Kayatha has been excavated, this culture is represented over a considerable area and is not simply a purely local manifestation. The absolute dating of the Kayatha Culture rests on some five <sup>14</sup>C determinations as well as its stratigraphic position beneath remains of the Ahar and Malwa Cultures. The excavators have suggested provisionally the time bracket 2000–1800 for the Kayatha Culture.

**Khera Manpur**, Dist. Bulandsharh, U. P. – Little is known of the circumstances surrounding the finding of a type IIIa and Vb axes and a lance head (nos. 272–274) in a *khera* (mound) at Manpur.<sup>127</sup> The date "28. 3. 11" is painted on the lance head in an obviously old handwriting, apparently indicating the find or accession date of this and the accompanying pieces.

**Khunti Subdivision**, Dist. Ranchi, Bi. – A copper ring and two "axes" were acquired from here which passed into the collection of the Bihar and Orissa Research Society and later to the Patna Museum.<sup>128</sup>

**Kiratpur**, Tehsil Anupsharh, Dist. Bulandsharh (28° 10' N; 78° 10' E). – Situated on the left bank of the Kali-nadi, some 3 km upstream from the better known site of Lal Qila, in February of 1970 this site

<sup>123</sup> Anon. 1871, 231–232: "... Three or four curious looking pieces of copper dug out of the Bengal Coal Company's mines at Kuhurbaree, which he [a worker] dug out of a hillock on the borders of this subdivision." Anderson, J. 1883, 182: Pachamba Subdivision. S. C. Roy places the find in the Giridh Subdivision (1916, 481–483).

<sup>124</sup> Wakankar, V. S. 1970; Ansari, Z. D./M. K. Dhavalikar 1971, 338–343; idem. 1975. The cultures include the (2) Ahar

and (3) Malwa Cultures, (4) Early Historic and (5) Sunga-Kushana-Gupta remains.

<sup>125</sup> Ansari, Z. D./M. K. Dhavalikar 1975, 145. In all, 27 bangles were found at Kayatha.

<sup>126</sup> Sankalia, H. D. 1974, 422.

<sup>127</sup> Shastri, H. 1915, 4.

<sup>128</sup> Roy, S. C. 1916, 482.

yielded a hoard including a miscellaneous anthropomorph, two axes (types II and IV a) and eight miscellaneous bangles (nos. 275–278). Subsequent excavations brought OCP sherds to light.<sup>129</sup>

**Kolber**, see Dist. Dhanbad

**Kosam** (Kausambi), Dist. Allahabad, U.P. – A type III a and IV a variant axe as well as three miscellaneous points reportedly derive as strayfinds from this settlement site (nos. 611, 713, 1080).

**Kota**, near Maholi, Tehsil Karauli, Dist. Sawaimadhopur, Raj. – In September of 1979 the State Department of Archaeology and Museums acquired eight copper axes said to have come from this site.<sup>130</sup>

**Kulgara**, P.S. Hura, Dist. Purulia, W.B. – Axe-ingots (two of type I and one of type Ib) and a bar celt-ingot were submitted to the nazirkhana of the district of Purulia in 1963 (nos. 424–427).<sup>131</sup> They derived from a tank in the deserted western part of the village of Kulgara, the latter which lies on the Purulia-Hura road via Lakshanpur. D.K. Chakrabarti tested the alleged findspot but was unable to detect traces of ancient habitation. He observed that at one time this area was heavily forested.

**Kulhade-ka-Johade**, Tehsil Neemka Thana, Dist. Sikar, Raj. (27° 44' N; 75° 47' E). – In 1977 R.C. Agrawal and his colleagues secured 58 copper axes which lay in the police station at Neemka for the State Department of Archaeology and Museums.<sup>132</sup> These axes reportedly derived from a site near the village of Kulhade-ka-Johade (literally 'tank of axes') which is near Ganeshwar and about 10 km from Neemka. Subsequent tests there revealed a so-called "OCP" similar in some ways to that known at Jodhpura and Ganeshwar.

**Kurada**, Dist. Nagaur, Raj. – The village of Kurada lies some 20 km from Parbatsar and is easily jeepable in about three and a half hours from Jaipur via Kishangarh.<sup>133</sup> In 1934 the local inhabitants found 103 copper artifacts buried in the field of a certain Kishan Puri (cf. nos. 198–208). These objects were accessioned by the Government Museum at Jodhpur and thereafter the authorities sold 93 of them as scrap, yielding a profit of Rs. 3.50. The remaining examples have been transferred to the Directorate of Archaeology and Museums in Jaipur for study purposes.<sup>134</sup>

**Kurdi**, see Kurada

**Kurukshetra**, see Raja Karna ka Qila (infra 111)

**Kushaya**, near Chatakorum mine, Subdivision Jamui, Dist. Monghyr, Bi. – A villager uncovered a single type II axe-ingot (no. 835) prior to 1935 while working in his field. This piece lay about a metre beneath the modern ground level.<sup>135</sup>

**Lal Qila**, Dist. Bulandsharh, U.P. – The low settlement tell of Lal Qila lies near Narainpur, 24 km from Anupsharh along the Aligarh-Anupsharh road. In 1968 R.C. Gaur and his colleagues of the Aligarh Muslim University began the excavation of this single culture OCP site and cleared some 600 m<sup>2</sup>. Although the deposit measured only between one and one and a half metres in thickness, three phases could be determined in the scrappy stratified architectural remains. Lal Qila occupies a special position among the contemporary sites because characteristic OCP was found there in quantity in undisturbed deposits; owing to generally better preservation conditions, various pottery shapes, variant fabrics and kinds of decoration became known for the first time. Thus far the study results have appeared only in preliminary form.

Among the finds were a piece of a flat pendant or bead, a fragmentary arrowhead (?), an axe fragment and an indeterminate object, all in copper.<sup>136</sup> A series of thermoluminescence assays carried out

<sup>129</sup> Gaur, R.C. 1973 a, 38; idem. 1981, 73.

<sup>130</sup> Agrawal, R.C. 1980, 92; Agrawal, R.C./V.Kumar 1982, 131–132; infra 109.

<sup>131</sup> Chakrabarti, D.K. 1975, 294.

<sup>132</sup> Agrawal, R.C. 1978, 123.

<sup>133</sup> Idem. 1980, 89.

<sup>134</sup> Orally expressed information, R.C. Agrawal.

<sup>135</sup> Mukherjee, G.N. 1935, 517.

<sup>136</sup> Gaur, R.C. 1974, 54 pl.41; infra 110.

on OCP sherds from Atranji khera, Lal Qila, Jhunjhina and Nasirpur provide a provisional indication of the dating for this pottery in the early to mid second millennium.<sup>137</sup>

**Langnaj**, (Andhario Timbo), Dist. Mehsana, Guj. (23° 27' N; 72° 32' E). – This site lies 59 km north of Ahmedabad at the rail station on the Kalol-Vijapur-Ambliyan branch of the Western railway. The sole prehistoric metal object deriving from Langnaj is a copper knife (no. 21) which came to light in Trench I, Layer 3 at a depth of 95 cm from the surface. Despite the able and concentrated efforts of the investigators, the stratigraphy proved difficult<sup>138</sup>, and while the context of the knife is known, little more can be said of the deposit than that it reflects Chalcolithic settlement remains. Associated finds include microliths, a ring stone and Black and Red Ware. The excavators suggest a date of c. 2000 for Langnaj, based largely on the pottery and lithic finds.<sup>139</sup>

**Lothal**, Dist. Ahmedabad, Guj (22° 31'25"N; 72° 35'25"E). – Lothal lies 16 km northwest of the confluence of the Bhogawo and Sabarmati rivers. What remains of the settlement rises some 6 m above the alluvial plain and covers an area of 550 × 400 m. Harappan materials stratified beneath Post-Harappan ones are in evidence. At least one imported Copper Hoard object, a fragmentary anthropomorph (no. 22), as well as two (?) type II axes (no. 23 and infra 110) derive from the Harappan levels.

A series of nine <sup>14</sup>C determinations from the different levels of Lothal provides indications for the absolute dating of this site and for the Harappan Culture itself. That for level IV (TF 29), which yielded the anthropomorph, provided a dating of 1895 BC ± 115.<sup>140</sup>

**Madnapur**, Dist. Hardoi, U.P. – Madnapur lies 19 km east of Allahganj on the Allahganj-Saudi road.<sup>141</sup> In 1975 V.N. Misra came across a hoard of ten axes from here, and also dug at the spot where they were said to have been uncovered as well as in the surrounding area, but was unable to unearth any occupational remains. The findspot was originally a forested area which was leveled and brought into cultivation. The hoard consisted of a heap of axes stuck together by corrosion products. One of them (no. 279) is of type II and the remaining axes belong to type Va. Two of the latter bear incised renderings of a humped bull. Two others were found broken and another was cracked. The axes range in length from 15.0 to 23.8 cm and weigh from 1025 to 1950 gm each.

**Mahisadal**, Dist. Birbhum, W.B. (23° 41'45"N; 87° 41'33"E). – Lying north of the Kopai river in a lateritic region, the Mahisadal tell measures some 230 × 135 m in area. It rises 5 m above the surrounding fields, 2 m of which are cultural debris. Two periods are distinguishable, one Chalcolithic and the other Iron Age.

Simple reed structures characterize Period I.<sup>142</sup> The associated Black and Red Ware is plain, painted in white and black, sometimes with incised or pinhole decoration. Other associated materials consist of microliths (scrapers, lunates and short blades), terracottas, tetrahedral weights, pins of bone, a fragment of a decorated comb, bangles and a quantity of semiprecious stones and steatite. A type IV a axe (no. 428) represents the sole published metal object from Period I.

**Mahuadanr**, Dist. Palamau, Bi. – A small type III c axe and two type III axe-ingots came to light at some time between 1957 and 1966, while a well was being cleared in the village.<sup>143</sup>

**Mainpuri**, Dist. Mainpuri, U.P. (27° 14' N; 79° 3' E). – A farmer in this district submitted some flat axes, a harpoon and some copper bangles (nos. 281–289) to the district magistrate, who passed them on to the Asiatic Society of Bengal in 1868. These objects, "... were found by a cultivator, whose

<sup>137</sup> Huxtable, J. et al. 1972.

<sup>138</sup> Sankalia, H.D. 1965, 13–14.

<sup>139</sup> Ibid. 20. 68.

<sup>140</sup> Rao, S.R. 1973, 163; Yule, P. 1982, 27.

<sup>141</sup> Misra, V.N. 1979, 52.

<sup>142</sup> Das, R.P. 1967, 59–60 pl. 41.

<sup>143</sup> Orally expressed information, Prof. Christian de Brouer, Ranchi.

plough struck against them in passing through his field. He described them to me as lying littered together in a heap without any order, and not enclosed in any vessel or receptacle. They were of course at no great depth below the surface."<sup>144</sup>

**Majhadpur**, see Mujahidpur

**Maski**, Dist. Raichur, Kar. – Neolithic, Megalithic and Andhra Cultures were identified here during campaigns carried out by B.K. Thapar from 1948 to 1950.<sup>145</sup> The settlement of Period I is characterized by ground stone axes and large numbers of microliths, including backed and serrated blades, lunates, trapezes, scrapers, points and burins. These shapes are regularly associated in the excavations of this period in Karnataka with handmade and/or tournette produced dull grey and pinkish buff wares. The use of metal is restricted to a single indeterminate wire (no. 7). No definite house plans or building remains were recovered. Maski I is assignable to the Neolithic I phase.<sup>146</sup>

**Mathura**, Dist. Mathura, U.P. – This site yielded a single type IIIa axe (no. 613) which A. Cunningham unearthed in a Buddhist context at the Chaubara mound during investigations conducted in 1871.<sup>147</sup>

**Mitathal**, Dist. Bhiwani, Har. (28° 50' N; 76° 10' E). – Mitathal lies 10 km northwest of Bhiwani and 118 km northwest of Delhi.<sup>148</sup> The site is located about 1.5 km to the west of the village and is reachable by cart path. Having obtained a battered harpoon (no. 1019) and a bangle (no. 925), both allegedly from here, Swami Omanand Saraswati (Acharya Bhagwan Dev) tested the site,<sup>149</sup> hoping to shed light on the Copper Hoard problem. In 1968 Suraj Bhan also conducted excavations there. The site consists of two hills 150 × 130 m and 300 × 175 m. The first of these, 'Mitathal 1' rises 5 m above the surrounding fields; 'Mitathal 2' stands some 3 m in height. Two trenches (one on each of the mounds) were sunk through nearly 5 m of settlement remains before reaching natural soil.

Three periods were determined: Period I is characterized by the presence of Late Siswal Ware in various fabrics. Period IIa contained Harappan wares as well as surviving Late Siswal fabrics. In Period IIB Late Siswal and Bara elements continue to develop together with Harappan or Post-Harappan remains. A general deterioration in the material culture sets in. Double axes, axes and bangles derive from the two later periods. On the strength of <sup>14</sup>C determinations and typological comparisons with objects from other, better dated sites, Suraj Bhan has suggested the following chronology:<sup>150</sup>

Mitathal I c. 2000–1900 BC

Mitathal IIA c. 1900–1700

Mitathal IIB c. 1700–1500

**Moongalaar Tea Estate**, Dist. Idukki, Ker. – In 1925 Mr A. Mactavish discovered a unique sword (no. 1066) while sinking a well here between the factory and the new estate bungalow.<sup>151</sup> The estate lies approximately 1000 m above sea level in the Cardamon hills and is located about 13 km north of the village of Vandiperiyar, bordered on the southwest by the Periyar river. F. R. Allchin took the effort to research the provenance of this sword and met an elderly retired worker at the estate whose recollection of the find was still quite clear. He described the other objects found as a large earthenware pot, holding some six gallons and three spikes (*śūla*) of iron. In addition, some wire of an unspecified metal

<sup>144</sup> Anon. 1868, 251–253.

<sup>145</sup> Thapar, B.K. 1957, 12–13.

<sup>146</sup> Allchin, B./F.R. Allchin 1982, 286–287.

<sup>147</sup> Cunningham, A. 1873, 16.

<sup>148</sup> Suraj Bhan 1975, 3.

<sup>149</sup> Orally expressed information. Mewa Singh actually

found two harpoons while ploughing on Mitathal 1, one of which got lost.

<sup>150</sup> Suraj Bhan 1975, 17; Shaffer, J. 1981, 70–72; Sharma, Y.D. 1980, 76; idem. 1982, 141–165 esp. 162–163 for a more recent appraisal.

<sup>151</sup> Allchin, F.R. 1979, 107–108.

was discovered. This suggests an Iron Age burial. Allchin searched the site and the surrounding area and found indications of the former existence of ancient (?) burials.

**Moradabad**, Dist. Moradabad, U.P. – A type II antenna sword (no. 1050) reportedly from this district passed into the collection of the Municipal Museum in Allahabad in 1962.<sup>152</sup>

**Mujahidpur**, P.S. Behtagokul, Dist. Hardoi, U.P. – In August of 1915 the State Museum in Lucknow accessioned a large type IIIa axe (no. 612) which reportedly derived from this village.<sup>153</sup> Recently A. Kumar examined the find area and located some OCP sherds.<sup>154</sup>

**Muttra**, see Mathura

**Nagar**, Dist. Jullundar, Punj. (31° 05' N; 75° 50' E). – Nagar lies about 9 km northeast of Phillore. Period I is characterized by a mixture of Painted Grey Ware and "Late Harappan" red ware. Kushana and early medieval finds constitute respectively Periods II and III. In the light of excavation and study at Bara and other neighbouring sites by Y.D. Sharma, our understanding of the nature and relative chronology of the area for the second millennium is in flux.<sup>155</sup> J.P. Joshi, the excavator, described the pottery as "Late Harappan", but Y.D. Sharma and others have stressed the vagueness of this term. The presence in the area of remains of the recently discovered Bara Culture reflects a local variety of Harappan and Late Harappan materials.

The site itself is known only from preliminary notices. Relevant finds include two oval structures (ovens) and postholes indicating round and circular huts. Other finds include a copper hook (no. 1081), bone points, ear ornaments, terracotta animal figurines, bangles and beads.

**Nakrahiya**, P.S. Kotwali, Dist. Sitapur, U.P. – Four type V a shouldered axes from Nakrahiya were received by the State Museum Lucknow in 1966 (no. 290–293). V.N. Misra reports this village to lie about 20 km north of Sitapur and 3 km west of the Sitapur-Gala road.<sup>156</sup> The axes lay buried near the surface of a cart track near a *neem* tree at the northern end of the village. No mounds of any size are to be found in the area except for one located 2 km northeast of Nakrahiya on the other side of the Sitapur-Gala road which yielded pottery solely of the late historical period.<sup>157</sup>

**Nandalalpura**, near Chaksu, Dist. Jaipur, Raj. – Situated on the Dhanda river, this site reportedly yielded six "bar celts" (presumably type IV c axes), each about 28 cm in length. The find seems to have been made in the late 1960's.<sup>158</sup>

**Nasirpur**, near Tehsil Mangalaor, Dist. Saharanpur, U.P. (29° 48' N; 77° 48' E). – This site lies about 12 km south of Roorkhee and 9 km west of Ambkheri. A hoard consisting of various kinds of axes, bars, a harpoon and lance heads (nos. 294–302) was acquired by the Gurukul Kangri in Hardwar perhaps during the early 1960's. B.B. Lal examined Nasirpur and found no occupational remains as such, but rather natural-looking yellowish-brown earth which contained sherds, which to judge from their colour, belong to the OCP complex.<sup>159</sup>

**Navdatoli**, Dist. West Nimar, M.P. – H.D. Sankalia and his colleagues investigated this important settlement near the hamlet Navdatoli in the late 1950's. Its irregularly shaped mounds lie in an area presently covered by scrub vegetation in the southern bank of the deep, broad and mature Narbada river valley on the fertile Malwa plateau. Originally a single large settlement may have existed. The least disturbed and southernmost mound, IV, which measured 282 × 216 m and rises 28 m above the

<sup>152</sup> Ghosh, A. 1965, 72. The provenance of the sword was changed to Chandausi after the manuscript went to press.

<sup>153</sup> Lal, B.B. 1951, 29.

<sup>154</sup> Kumar, A. 1981, 101.

<sup>155</sup> Sharma, Y.D. 1982, 141–165 esp. 162–163.

<sup>156</sup> Misra, V.N. 1980, 56.

<sup>157</sup> Idem. 1979, 52.

<sup>158</sup> Agrawal, R.C. 1981a, 30–31 n.21; Agrawal, R.C./V. Kumar 1982, 131.

<sup>159</sup> Lal, B.B. 1968, 859; Sinha, B.C. 1973, 6: erroneously given as having been excavated by M.N. Deshpande.

flood plain, was selected for excavation. Large scale investigations (nearly 6500 m<sup>2</sup>) reaching as deep as 3.3 m below the modern surface revealed remains mostly of the Chalcolithic (Period I) and of the Iron Age (Period II). Still later remains also occurred.

Four phases constitute Period I<sup>160</sup> represented by settlement debris interspersed with clearly visible floors. The definition of the phases rests on developments in the pottery. Resting on virgin soil, Phase I is characterized by a painted black and red ware, cream slipped ware and variants thereof, along with the main black painted Malwa Ware. In Phase II the black and red ware disappears although the other previously associated wares continue. Phase III is marked by a thick burnt layer above which the cream slipped ware disappears and Jorwe Red Ware now comes to the fore. In addition, long spouted bowls suddenly occur in large numbers. From the uppermost floors storage jars bearing applique designs belong to Phase IV. A grey ware with affinities to that of Karnataka and Maharashtra occurred in all phases. Copper objects were common (cf. nos. 52–82).

Navdatoli and Inamgaon are the most extensive and intensively investigated sites of the Malwa Culture. From the associated remains and from the occurrence of Jorwe Ware in Phase III the chronology of Navdatoli is on a relatively sound footing. Eight calibrated <sup>14</sup>C determinations buttress the dating. Thus, for Period I the excavators have suggested the time bracket 1600–1300.<sup>161</sup>

**Nevasa**, Dist. Ahmednagar, Mah. – Lying on the south bank of the Pravara river, Nevasa rises some 23 m above the surrounding flood plain. In 1954 this eroded site measured some 200 × 400 m, whereby the maximal extent of the Chalcolithic occupation is unknown. H. D. Sankalia and his colleagues excavated the southern bank in 1954–55 and 1959–60 in four campaigns and for the first time a fairly complete sequence emerged including remains of the Palaeolithic, Chalcolithic, early historic, Indo-Roman and early Muslim periods. The Chalcolithic remains were designated Period III, and they revealed a great deal about the Jorwe Culture.

Large rectangular structures were discovered, one of which measured 6.5 × 14.8 m, although most were smaller. Large storage jars, well over 1 m in diameter, came to light, sunk into a house floor. Unplastered pits measuring 1.2–2.7 × 0.9–1.5 × 0.5–1.2 (depth) m were cleared which in two cases were associated with nearby postholes and which may have served as dwellings. The inhabitants nourished themselves with various kinds of grain; remains of several domestic and wild animals also came to light, which played a role in the economy of the settlement.

Nevasa and Jorwe are the type sites for the Jorwe Culture. Aside from the characteristic pottery other associated finds include sharpeners made of sherds, querns, a varied lithic repertoire and a developed copper working industry.<sup>162</sup>

**Niorai**, Dist. Etawah, U.P. (about 26° 40' N; 79° E). – In 1837 a certain Dr Theodore Cantor acquired a type II harpoon and a lance head (nos. 303 and 304) from the local inhabitants at Niorai. These antiquities reportedly were part of a hoard consisting of other kinds of metal implements which lay exposed in an embankment following a landslide.<sup>163</sup> The extant artifacts were submitted to the Asiatic Society of Bengal, from which point they were transferred to the Royal Society of Antiquaries of the North in Denmark.

**Oriup**, Dist. Bhagalpur, Bi. – On the southern bank of the Ganges about 2 km southwest of the Anti-chak stupa site near the village of Oriup, B. P. Sinha and R. C. P. Singh came across this site in 1966. Subsequently they opened two trenches (6 × 4 m) on each of two adjoining mounds, the latter which are separated by a modern road. Four periods were identified: Chalcolithic, NBP, Pala and Medieval.

<sup>160</sup> Sankalia, H. D. 1971, 35–42.

<sup>161</sup> Ibid. 40; Dhavalikar, M. K. 1979, 236–237.

<sup>162</sup> For the dating, *supra* 15.

<sup>163</sup> Anon. 1832, 12.

The Chalcolithic remains include an oven and circular fireplace, a terracotta "temple figurine", copper bangle(s) and a microlithic core. The Chalcolithic pottery is white or cream-painted black and red ware.<sup>163a</sup>

**Pachamba Subdivision**, see Karharbari

**Paklihal**, see Piklihal

**Pandu Rajar Dhibi**, Dist. Burdwan, W.B. (23° 35' N; 87° 39' E). – From 1962 to 1965 the Department of Archaeology of West Bengal, led by P. C. Das Gupta, carried out four seasons of excavation at Pandu Rajar Dhibi (the mound of King Pandu) near Pandu.<sup>164</sup> This settlement site is located just over 1 km south of the Ajay river, about 10 km from the Bhedia railway station. Numerous small trenches were made at various places in the mounds, revealing four cultural periods. Periods I and II are Chalcolithic. A thick handmade grey ware with impressions of paddy husk, black and red ware and plain red ware provide scanty evidence for the first period.

Better represented are the remains of Period II. The pottery thereof has been described as painted or plain black and red ware, lustrous red ware bearing black painted designs, black burnished pottery and white painted chocolate ware. Periods III and IV contained respectively Iron Age and historical remains. In Period II associated small finds included numerous microliths, bone tools, points, arrow-heads and copper tools. Several burials were also encountered. The mud brick (?) architecture there has not yet been published.

**Pariar**, Dist. Unnao, U.P. – Just east of the Ganges opposite Bithur, lies the town and the tell site of Pariar, where at the beginning of the century numerous Copper Hoard objects were reported (cf. nos. 305–307).<sup>165</sup> In 1978 B. B. Lal, K. N. Dikshit and their colleagues laid out five trenches at various points on the mound. In trench PRR-3 in the lowest level a deposit 60 cm thick was found which contained OCP, black slipped, black and red wares and red ware. Terracotta beads, discs, bone points and undescribed copper objects also came to light.<sup>166</sup>

**Parihati**, Dist. Midnapur, W.B. (22° 30' N; 86° 54' E). – Located 25 km<sup>167</sup> northwest of the town of Jhargram on the right bank of the Dulang, a tributary of the Kangasavati, Parihati is a village which reportedly has yielded ancient and medieval finds.<sup>168</sup> While digging at a depth of 2 m beneath the surface, an agriculturalist reportedly uncovered five large type I double axes, a bar and a unique cult object (nos. 435–441). Subsequent survey work has shed little light on the antiquity of these objects.

**Patan** (taluk or town), Dist. Mehsana, Guj. (23° 51' N; 72° 10' E). – This place has been given as a provenance for antenna swords.<sup>169</sup>

**Pauli**, Dist. Jind, Har. – A group of bangles, mostly type III (no. 930) recently was acquired here.

**Piklihal**, Dist. Hyderabad, A.P. – Excavated by F. R. Allchin in 1952, this key site yielded stratified Neolithic, Iron Age, early historic and Medieval occupational materials.<sup>170</sup> The Neolithic remains are the most completely documented of those on the subcontinent. Piklihal is formed of a series of small mounds dominated by a large mound. In all this site measures some 1 × 2 km. Most of the eight trenches at Piklihal yielded Neolithic remains. The sequence here corresponds closely to that of nearby Maski.

<sup>163a</sup> Sankalia, H. D. 1972, 164; Sinha, B. P. 1975, 6.

<sup>164</sup> Das Gupta, P. C. 1964; 1964a; 1965; 1967; 1969.

<sup>165</sup> Führer, A. 1891, 168, 172; Smith, V. A. 1905, 232; Shastri, H. 1915, 5.

<sup>166</sup> Lal, B. B. et al. 1981, 61–62.

<sup>167</sup> Ray, A./A. K. Datta 1978, 62.

<sup>168</sup> I am grateful to Dr Dilip Chakrabarty for discussing this site with me.

<sup>169</sup> Sankalia, H. D. 1974, 397 note 379, on oral information from S. P. Gupta. Same as nos. 1055–1057, 1060 (?) cf. "Patan" in the list of non-evaluatable finds.

<sup>170</sup> Allchin, F. R. 1960, 20–24. 107 pl. 21. 55; Allchin, B./F. R. Allchin 1982, 286–287.



The Neolithic settlers responsible for a copper bowl and a chisel (nos. 8 and 9) are known from a ground stone axe industry and a somewhat rudimentary stone flake or blade tradition. Remains of their domesticated cattle, sheep and goats are well documented. A handmade grey or buff-brown pottery predominates, but a less common ware had a black or red burnished slip and often ornament executed with purple paint. The grey ware characteristically is decorated with post-fired ochre bands. The Allchins point out that the applied ringfeet and hollow pedestals recall those of pre-Harappan Amri and Kalibangan. Evidence in the form of querns suggests grain cultivation or collection and stations in forested areas probably served for seasonal grazing.

**Pind** near Padaliya, Dist. Chittorgarh, Raj. – In 1978 six longish (type IV?) axes said to come from here were acquired by the Directorate of Archaeology and Museums Rajasthan;<sup>171</sup> R.C. Agrawal identifies this site with the Ahar Culture.

**Pondi**, Tehsil Teonthar, Dist. Rewa, M. P. – This village is approachable by way of the Allahabad-Rewa road and lies about 65 km south of Allahabad. While constructing a school here workmen unearthed 47 metal bangles and five axes (cf. nos. 532–535), the published examples of which in their shapes resemble more closely those of the doab than of Chota Nagpur. In 1949 the superintendent of archaeology of Madhya Pradesh presented a sample collection of Pondi objects to the Municipal Museum in Allahabad.

**Prakash**, Dist. Dhulia, Mah. – Located south of the village of Prakash, this mound covers some 182 × 430 m and rises over 20 m above the surrounding plain. Prakash itself lies in the valley of the westward flowing Tapti river. For the time being, it is the only site in the area described in a final excavation report. Known from a single trench, the Prakash Culture is characterized by a plain grey ware and a fine reddish brown painted ware. A coarse red ware decorated with incised and applique figures has strong affinities with Malwa ware, although several vessel forms of this culture are lacking at Prakash. Only a tiny scrap bears witness to the metal industry here (infra 110).

**Raja Karna ka Qila**, Dist. Kurukshetra, Har. – The finds excavated from this settlement mound reportedly belong to the Maurya and Late Maurya Periods (infra 111).

**Rajpur Parsu**, Dist. Bijnor, U. P. (29° 8' N; 78° 13' 50" E). – In June of 1896 a hoard consisting of various axes, an axe-ingot, a bar and harpoons, said to come from this mound, was acquired by the Lucknow Museum (nos. 308–324). In 1948 B. B. Lal located Rajpur Parsu and described it as rising between 1 and 2 m in height and covering an area nearly of some 800 × 800 m.<sup>172</sup> In his five small trenches he revealed occupational deposition reaching over 2 m in depth. Although no copper objects occurred, he did come across OCP generally similar in appearance to that first found at Bisauli.

**Ramjipura**, Tehsil Harsud, Dist. East Nimar, M. P. (21° 58' 30" N; 79° 49' 30" E). – In 1961 C. Krishna obtained a type IIIa axe (no. 619) at this site. Subsequently, he laid out a trial trench, 2.44 m<sup>2</sup> on a side, but failed to locate any ancient remains.<sup>173</sup>

**Rangpur**, Dist. Surendranagar, Guj. (22° 26' N; 71° 55' E). – Rangpur is one of the few sites in Kutch and Saurashtra which sheds light on local developments from the mature Harappan through the Iron Age. The three periods (Microlithic, Harappan, Lustrous Red Ware Cultures) are numbered respectively I–III. Metal objects are represented by a single pin in Period III (no. 24).<sup>174</sup>

**Resgavaon**, Tehsil Sadabad, Dist. Mathura, U. P. – A hoard of 14 type V axe-ingots (cf. nos. 325–336) was acquired by the State Museum Lucknow in the early 1970's of which nothing specific is known of the find circumstances.

<sup>171</sup> Agrawal, R. C. 1978, 124; Agrawal, R. C./V. Kumar 1982, 131.

<sup>172</sup> Lal, B. B. 1951, 37.

<sup>173</sup> Krishna, C. 1964, 99; idem. 1965, 197.

<sup>174</sup> Rao, S. R. 1963, 150–151.



**Rewari**, Dist. Mahendragarh, Har. (28° 12' N; 76° 28' E). – More Copper Hoard objects have been reported as coming from the town of Rewari than from any other place. Yet Rewari (90 km west of the Yamuna) lies outside the doab heartland. During the last 30 years Swami Omanand Saraswati has obtained metal artifacts here from local inhabitants who reportedly find them during agricultural operations and who bring them to Rewari for sale.

Particularly numerous are axes (types II, IIIa, IVa, IVb, IVe), mixed groups of bangles, chisels, swords (mostly type I variants and fragments). Type IVc and VI axes seem to exist only in this area. Many metal finds similar to each other in appearance must have occurred in hoards from here, but little more than this can be said about the find circumstances.

**Sadabad**, Dist. Mathura, U.P., see Resgavaon

**Saguni** (Saguna?), P.S. Patan, Dist. Palamau, Bi. – Nothing is known of the find circumstances which surround the discovery of a type Va variant axe (no. 784). According to the label on the piece, it was found 27.9. 1910 in Saguni.

**Saipai Lichchwai**, Dist. Etawah, U.P. – In 1969 a hoard of copper artifacts from the village of Saipai was uncovered and dispersed. It consisted of a hooked “sword”, anthropomorphic figures, axes, bangles, “bar celts” (probably bars) and harpoons. Shortly thereafter in May of 1970 L. M. Wahal of the Archaeological Survey of India carried out trial excavations near the findspot and uncovered a lance head (no. 340). Later that year an area 20 × 20 m<sup>175</sup> was investigated and a type II harpoon (no. 338) came to light.<sup>176</sup> The harpoon lay stratified with some red slipped ware (OCP) which in some cases was punched with a cross-hatched design. Associated finds include pounders, rubbers, querns and pallets of sandstone, a chert blade and a chalcedony blade.<sup>177</sup> Traces of wattle and daub houses were found. Also significant were some bones of *Bos indicus* indicative of the domestication of the species at this time.

**Sanghol**, Dist. Ludhiana, Punj. (30° 45' N; 76° 20' E). – This settlement site lies near to a now dry water course, perhaps an ancient bed of the Sutlej. During the course of excavation, which continued from 1969 to 1973, R. S. Bisht determined six successive cultural periods within the context of the so-called Bara Culture. The lowest (IA) is characterized by the presence of Bara Ware, but a weight in chert and some pottery sherds reveal outside influences. Subperiod IB yielded considerable quantities of Bara and Cemetery H Wares. Later, G. B. Sharma took up the work again, confirmed Bisht's stratigraphic observations and, in a brief report, redefined the designations for the levels. The resulting subperiods/levels IA, IB, IC contain respectively Bara Ware without architectural remains, Bara Ware within definite structures and Bara overlapped with Painted Grey Ware.<sup>178</sup> No. 221, comprising 92 restrung gold beads, is the sole metal object published from this excavation.

**Sardarshahar**, see Saunia

**Sarthauli**, Pargana Kant, Dist. Shahjahanpur, U.P. – In June of 1921 the magistrate of this district presented several copper implements to the Lucknow Museum including a miscellaneous axe, type I harpoon and lance heads (nos. 341–347).<sup>179</sup> V. N. Misra recently surveyed the area but was unable to find any evidence of ancient occupation.<sup>180</sup>

**Sastevadi**, Dist. Pune, Mah. – Trial excavations carried out by S. R. Rao and P. Narayan Babu on the northern bank of the Mula-Mutha river brought to light the remains of three periods of settlement.<sup>181</sup>

<sup>175</sup> Lal, B. B. 1972a, 282–287.

<sup>176</sup> Anon. 1973a, 40.

<sup>177</sup> Lal, B. B. 1972a, 283–284.

<sup>178</sup> Sharma, Y. D. 1982, 154–157.

<sup>179</sup> Lal, B. B. 1951, 28.

<sup>180</sup> Misra, V. N. 1979, 52.

<sup>181</sup> Rao, S. R. 1975, 35.

The earliest showed burnished grey ware accompanied by Malwa Ware. Period II yielded Jorwe fabric. The latest occupation is historical. In the Period II architecture, parallel-sided blades of chalcedony and a copper fish hook were found.

**Saunia** (Sabania?),<sup>182</sup> Tehsil Lunkaran, Dist. Bikaner, Raj. – In 1966 two type IV b axes (nos. 738 and 739), were acquired in Sardarshahar, which reportedly derived from Saunia.

**Shahabad area**, Dist. Hardoi, U.P. – Since the mid 1960's the National Museum in New Delhi has acquired from Dr. Jagdish Gupta of the University of Allahabad a series of Copper Hoard objects reportedly from Shahabad.<sup>183</sup> The materials include axes (types III a and V a), harpoons (types I and II), and swords (types I and III).

**Sheorajpur**, Dist. Kanpur, U.P. – Three type II anthropomorphic figures from this site were acquired by the Lucknow Museum in January of 1910 (nos. 348–350).

**Somnath** (Prabhasa Patan), Dist. Junagadh, Guj. (20° 53' N; 70° 24' E). – Prabhasa Patan, better known as Somnath, is a settlement site which lies about 85 km south of Junagadh, the district headquarters. The site is situated on a rolling plain near the sea shore. It consists of five eroded mounds which stretch nearly 1 km along the north bank of the Hiranya river. B. Subbarao began limited excavations here in 1956. Of his six periods, I and II are Chalcolithic. In 1972 H.D. Sankalia and his colleagues resumed excavations and redefined the sequence.<sup>185</sup> The sole published metallic artifact from here is a type I axe (no. 25) from period I, which occurred together with Prabhasa Ware, a pottery coterminous with the so-called Late Harappan Culture.

Near **Tamajuri**, Pargana Jhatibani, Dist. Midnapur, W.B. – In the late nineteenth or early twentieth century F.A. Perroux presented a type I axe-ingot (no. 815) to the Indian Museum which he reported to have been found at the foot of the hill system of Manbhum, beyond Sildah in this *pargana*, near the village of Tamajuri.<sup>186</sup> Some villagers unearthed the artifact while digging a pit for some domestic purpose.

**Tehsil Karauli**, see Kota

**Tekkalakota**, Taluk Siraguppa, Dist. Bellary, Kar. – Lying nearly 5 km from the Tungabhadra river, Tekkalakota consists of a series of 19 open areas surrounded by outcropping large granite boulders. M.S. Nagaraja Rao excavated two of these sites during late 1963 and early 1964.<sup>187</sup> TKT 1 showed the remains of two phases, the first of which is characterized by the use of ground stone axes and stone blade tools made from chert and chalcedony. Handmade pale grey and burnished grey pottery, plain and ochre-painted wares, gold ornaments and a type III c axe belong to this phase (nos. 10–13). The finds seemed to belong to a settlement consisting of small huts with plastered floors.

Phase II is characterized by the continuation of burnished wares but pale grey and ochre-painted wares fall out of favour. A dull red and black and red ware with white painting occurred in the burials. Rings and wires document the use of metal in this phase.

**Terdal**, Taluk Jamkahndi, Dist. Bijapur, Kar. – The village of Terdal is located about 3 km south of the Krishna river. In 1964 A. Sundara surveyed the area around Terdal, discovering several sites, some of which were Neolithic.<sup>188</sup> The Neolithic sites contained a black on red painted pottery of the same fabric as that of the plain grey ware known from Maski, Piklihal and Brahmagiri. About 2 km east-northeast of Terdal, Sundara excavated a Neolithic burial circle, some 6 m in diameter and about

<sup>182</sup> Virgenand Devakarni from the Kanya Gurukul in Nar-ela supplied this site name. R.C. Agrawal gives Bikaner as the name of the district (Agrawal, R.C./V. Kumar 1982, 131).

<sup>183</sup> Anon. 1975, 81.

<sup>184</sup> Nanavati, J.M. et al. 1971.

<sup>185</sup> Sankalia, H.D. 1974, 381–383.

<sup>186</sup> Brown, J. Coggin 1917, 142.

<sup>187</sup> Nagaraja Rao, M.S. 1978, 8–14.

<sup>188</sup> Sundara, A. 1970, 23–31.

10–12 cm in height at the centre. The burial pit was ovoid in plan and consisted of dark red earth and sandstone rubble. Interred with the fractional and east-west extended burial were four broken grey ware pots, a copper bangle (no. 14), a parallel-sided flake and two crescents.

Sundara also excavated the nearby Neolithic settlement site of Vibhutimaddi. There he obtained charcoal samples which he submitted for radiocarbon dating. The determinations obtained were widely scattered.<sup>189</sup> He also obtained a copper bangle from the surface of this site (no. 15).

**Yammigudda**, see Kallur

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<sup>189</sup> Ibid.

## THE MATERIAL

The first part of the following catalogues metal implements, the find circumstances of which are relatively well documented. Included are artifacts reportedly found together in hoards or those which derive from systematically excavated contexts.<sup>1</sup> The finds belong to six geographically defined regions, each of which (*infra* 27–51) is further divided by site and stratum. The objects of a given site or stratum then are arranged taxonomically. A comprehensive summary of each of the artifact types appears in the second part, (*infra* 51–94), together with the remaining examples – sketchily documented purchases, strayfinds and objects whose provenances are otherwise obscure. With regard to the determination of provenance, I have tended away from optimism toward caution.

The designations for the artifact types are more or less conventional. Some types are morphologically more homogeneous in terms of their constituent members than others, this conditioned by the random nature of the material itself.

Different regions can be identified with reference to natural geographical areas and their associated assemblages of cultural remains. The finds from southwestern India are mostly from present day Karnataka. Midwestern India is taken to encompass an area stretching from Maharashtra to western Madhya Pradesh. Gujarat is bordered on the west by the sea, on the north by desert. The elevated plains of northern Rajasthan and southern Haryana are bordered to the east by the low lying Ganges-Yamuna doab, which forms much of Uttar Pradesh. The eastern part of Chota Nagpur covers the southern half of Bihar, northeastern Orissa and fades gradually into the Bengal flatlands. A last region includes scattered findspots in Madhya Pradesh. Chalcolithic metal finds are unknown from other parts of the subcontinent.

## HOARDS AND STRATIFIED FINDS

### SOUTHWESTERN INDIA

1. **Brahmagiri**, Dist. Chitaldrug, Kar. Cutting 21, middle stratum of Period IB, Neolithic. – Miscellaneous axe (excav. no. Br 21–121). 6.1 × 3.5 × 1.0 cm, contaminated with SiO<sub>2</sub> 51.4%, Cu 44.87%, Fe 1.37% (*Pl. 1, 1*). – Karnataka Gov't. Mus. Bangalore. – Wheeler, R.E.M. 1948, 267–268 fig. 41, 3.
2. **Brahmagiri**, Dist. Chitaldrug, Kar. Burial urn T36 in Burial 21, early stratum of Period IB, Neolithic. – Miscellaneous wire (excav. no. Br 21–282). 13.2 × 0.4 cm, Cu 47%, Sn 9%, Fe 1.05%, oxidation products 44.48% (*Pl. 1, 2*). – Karnataka Gov't. Mus. Bangalore. – Wheeler, R.E.M. 1948, 267–268 fig. 41, 1.
3. **Brahmagiri**, Dist. Chitaldrug, Kar. Cutting 22, late stratum of the Period IB, Neolithic. – Finger ring (excav. no. Br 22–702). D c. 1.8 × 0.5 cm, Cu 98.7%, Ni tr, oxidation products 1.3% (*Pl. 1, 3*). – Karnataka Gov't. Mus. Bangalore. – Wheeler, R.E.M. 1948, 268–269 fig. 41, 4 pl. 118, 19.
4. **Brahmagiri**, Dist. Chitaldrug, Kar. Cutting 17, middle stratum of Period IB, Neolithic. – Miscellaneous

<sup>1</sup> A few sites are not readily assignable to a geographical-cultural region. Chirand, for example, lies in present day Bi-

har but seems to have stronger cultural affinities with the doab than with Chota Nagpur.

wire (excav. no. Br 17-80). 10.6 × 0.7 cm, round in section, heavily corroded (*Pl. 1, 4*). – Karnataka Gov't. Mus. Bangalore. – Wheeler, R.E.M. 1948, 267-268 fig. 41, 2.

5. **Hallur**, Dist. Dharwar, Kar. Period I, Phase II, Neolithic and/or Iron Age. – Miniature double axe. 3.4 × 2.5 cm, heavy surface corrosion (*Pl. 1, 5*). – Kannada Research Inst. Dharwar (?). – Gupta, S.P. 1965, 3-6 pl. 7; Agrawal, D.P./S.Kusumgar 1966, 585-586; Nagaraja Rao, M.S. 1978, 14-15.

6. **Hallur**, Dist. Dharwar, Kar. Period I, Phase II, Neolithic and/or Iron Age. – Miniature double axe. 5.5 × 5.7 cm, surface corrosion (*Pl. 1, 6*). – Kannada Research Inst. Dharwar (?). – Gupta, S.P. 1965, 3-6 pl. 7; Agrawal, D.P./S.Kusumgar 1966, 585-586; Nagaraja Rao, M.S. 1978, 14-15.

7. **Maski**, Dist. Raichur, Kar. Cutting 10, mid level of Period I, Neolithic. – Miscellaneous wire (excav. no. MSK 10, 410). 7.4 × 1.0 cm (*Pl. 1, 7*). – Present whereabouts unknown. – Thapar, B.K. 1957, 114 fig. 34, 1.

8. **Piklihal**, Dist. Hyderabad, A.P. Site VIIIA, between layers 3 (Iron Age) and 4 (Neolithic). – Chisel with blunted head. 15.8 × 1.52 cm (*Pl. 1, 8*). – Present whereabouts unknown. – Allchin, F.R. 1960, 24, 106-107 pl. 55, 5.

9. **Piklihal**, Dist. Hyderabad, A.P., Area D, site VII,

layer 6, Late Neolithic. – Two vase fragments. Original D 11.5 cm (*Pl. 1, 9*). – Present whereabouts unknown. – Allchin, F.R. 1960, 106-107 pl. 55, 7.

10. **Tekkalakota**, Dist. Bellary, Kar., trench 1, phase I, house, Late Neolithic. – Flat axe, type IIIc. 12.8 × 8.2 × 1.65 cm (*Pl. 1, 10*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D. 1974, 534-535; Agrawal, D.P. 1982, 116 fig. 68; Allchin, B./F.R. Allchin 1982, 287.

11-13. **Tekkalakota**, Dist. Bellary, Kar., trench 1, layer 4, phase I, Late Neolithic. – Three ornaments in gold. No. 11: 2.61 × 1.0 × 0.7 cm; No. 12: 2.6 (pres.) × 1.1 cm; No. 13: c. 3.21 × 1.2 × 0.6 cm (*Pl. 1, 11-13*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Nagaraja Rao, M.S. 1967, 25; Sankalia, H.D. 1974, 533-535 fig. 234 a, b; idem. 1977, 141 fig. 17, 6; Nagaraja Rao, M.S. 1978, 12 pl. 5 B; Agrawal, D.P. 1982, 115 fig. 67.

14. **Terdal**, Taluk Jamkhandi, Dist. Bijapur, Kar. – Neolithic burial, near right hand of the deceased. Bangle, type II. D c. 5.8 cm (*Pl. 1, 14*). – Present whereabouts unknown. – Sundara, A. 1970, 23-31 pl. 3 C, 2.

15. **Vibhutimaddi site**, Taluk Jamkhandi, Dist. Bijapur, Kar. – Surface find by the Neolithic settlement. Bangle, type II. D c. 5.8 cm (*Pl. 1, 15*). Present whereabouts unknown. – Sundara, A. 1970, 23-31 pl. 3 C, 1.

## GUJARAT

16. 17. **Bagor**, Dist. Bhilwara, Raj., burial 5, trench GIII, phase II, Chalcolithic. – Arrowheads. No. 16: 2.5 × 2.1 × 0.2 cm; No. 17: 2.5 × 1.9 × 0.2 cm, both were pierced twice in order to fix them to an arrow shaft (*Pl. 1, 16, 17*). – Present whereabouts unknown. – Misra, V.N. 1970a, 86-92 fig. 16, 1, 2; idem. 1970, 221-232 fig. 1, 1-2; Agrawal, R.C. 1981a, 25-26 fig. 7; Agrawal, R.C./V.Kumar 1982, 127 fig. 11, 3.

18. **Bagor**, Dist. Bhilwara, Raj., burial 2, trench G1, phase II. – Arrowhead pierced twice in order to fasten it to the shaft, 2.2 × 2.4 × 1.5 cm (*Pl. 1, 18*). – Present whereabouts unknown. – Misra, V.N. 1970, 221-232 fig. 1, 3; idem. 1970a, 86-92 fig. 16, 3; Agrawal, R.C. 1981a, 25-26 fig. 7; Agrawal, R.C./V.Kumar 1982, 127 fig. 11, 3.

19. **Bagor**, Dist. Bhilwara, Raj. Context, supra no. 18. – Blade fragment, 11.7 (pres.) × 1.9 × 0.3 cm (*Pl. 1, 19*). Present whereabouts unknown. – Misra, V.N. 1970a, 86-92 fig. 15 a, 2; Agrawal, R.C./V.Kumar 1982, 127 fig. 11, 3.

20. **Bagor**, Dist. Bhilwara, Raj. Context, supra no. 18. – Miscellaneous point, 10.7 × 0.25 cm (*Pl. 1, 20*). – Present whereabouts unknown. – Misra, V.N. 1970a,

86-92 fig. 15 a, 1; Agrawal, R.C./V.Kumar 1982, 127 fig. 11, 3.

21. **Langnaji**, Dist. Mehsana, Guj., trench I, layer 3, c. 95 cm beneath the surface. Associated with red and black ware. – Knife, 31.5 × 2.7 × 0.3 cm, Cu 98.12%, Fe 0.61%, Pb 0.28%, Co 0.18%, Ni 0.48% (Hegde) (*Pl. 1, 21*). – Present whereabouts unknown. – Hegde, K.T.M. 1964, 89; idem. 1965, 65-67; Sankalia, H.D. 1965, 20 pl. 10, 1-3; 23.

22. **Lothal**, Dist. Ahmedabad, Guj., Phase IV of period A, Harappan. – Fragmentary type I anthropomorph. 13.0 (pres.) × 12.8 (pres.) × c. 0.08 cm, Cu 97.27%, Pb 2.51% (Rao), surface patterning runs lengthwise, lower portion slightly thicker than the edge of the head, 'arms' and 'legs' broken off (*Pl. 1, 22*). – ASI Ahmedabad (10918). – Rao, S.R. 1958, 13 pl. 21 A; Gupta, S.P. 1965, 5 fig. 3; van Lohuizen-de Leeuw, J.E. 1960, 24-25; Agrawal, D.P. 1969, 114-115 fig. 2, idem. 1971, 192-193 fig. 19; Jarrige, J.-F. 1971, pl. 20, 3; Lal, B.B. 1972, 286; Rao, S.R. 1973, 83-84 fig. 20, 21; Yule, P. 1982 37 fig. 18, 22.

23. **Lothal**, Dist. Ahmedabad, Guj. Presumably period A, Harappan. – Axe, type I. C. 11.2 × 12.1 cm,

roughly weathered surface (*Pl. 1, 23*). – Lothal Mus. (?). – Gupta, S.P. 1965, 6 pl. 6; Rao, S.R. 1973, 83 fig. 20, 22; Yule, P. 1982 37 fig. 18, 19; page 40 note 24.

**24. Rangpur**, Dist. Surendranagar, Guj. Period III. – Pin (excav. no. 330). L 10.0 (pres.) cm × D 0.6 cm, Cu 91.80%, Sn 0.60%, Fe 1.88%, Ni 5.88%, broken in the middle (*Pl. 1, 24*). – Present whereabouts unknown. – Rao, S.R. 1963, 150–151 fig. 55, 5.

**25. Somnath**, Dist. Junagadh, Guj., trench III, layer (15),<sup>2</sup> period I, Prabhasa Culture (Post-Harappan). – Axe, type I. 13.33 × 9.2 × 0.63 cm, Cu 81.86%, Sn 12.82%, Fe 2.57%, Pb 1.21%, tr: Ni, Co, As, Bi, Mn, Zn, Al, Cr, Mo, Zr, W, Ti, Gd, Ca, metallographic analysis: edge hot and cold forged (Hegde) (*Pl. 1, 25*). – Present whereabouts unknown. – Hegde, K.T.M. 1964, 85–87; Agrawal, D.P. 1970, 15–22; Nanavati, J.M. et al. 1971, 17. 77. 91–93 pl. 11.

## MIDWESTERN INDIA

**26. Chandoli**, Dist. Pune, Mah., trench 3, layer 1, Malwa Culture. – Miscellaneous bangle (excav. no. 170). D 6.9 cm, wire D 0.29 cm, heavily corroded (*Pl. 1, 26*). – Present whereabouts unknown. – Deo, S.B./Z.D. Ansari 1965, 114–115 fig. 57, 1.

**27. Chandoli**, Dist. Pune, Mah., trench 6, layer 1, Malwa Culture. – Chisel (excav. no. 364), 13.3 × 0.7 × 0.8 cm, surface heavily corroded (*Pl. 1, 27*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Deo, S.B./Z.D. Ansari 1961, 27 pl. 34, 5; idem. 1965, 115 fig. 57, 6; 59, 3.

**28. Chandoli**, Dist. Pune, Mah., trench 5, layer 1, Malwa Culture. – Knife with an antenna butt (excav. no. 375). 16.9 × 3.5 × 0.35 cm, hollow edges, corroded on both sides (*Pl. 1, 28*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Deo, S.B./Z.D. Ansari 1961, 27 pl. 34.2; idem. 1965, 113–116 fig. 57, 9; 58, 1; Sankalia, H.D. 1979, 55 pl. 3c.

**29. Chandoli**, Dist. Pune, Mah., trench 5, layer 1, Malwa Culture. – Complete (?) fishhook. 1.45 (pres.) × 1.2 cm, no barb, the longer portion incomplete (*Pl. 1, 29*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Deo, S.B./Z.D. Ansari 1965, 114–115 fig. 58, 2.

**30. Chandoli**, Dist. Pune, Mah., trench 5, layer 1, Malwa Culture. – Fragmentary fishhook (excav. no. 77). c. 2.0 × 1.0 cm (*Pl. 1, 30*). – Present whereabouts unknown. – Deo, S.B./Z.D. Ansari 1965, 114–115 fig. 57, 3.

**31. Chandoli**, Dist. Pune, Mah., trench 5, layer 1, Malwa Culture. – Fragmentary fishhook (excav. no. 78). c. 1.25 (pres.) × 2.6 cm (*Pl. 1, 31*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Deo, S.B./Z.D. Ansari 1965, 114–115 fig. 57, 4.

**32. Chandoli**, Dist. Pune, Mah., trench 7, layer 2, Malwa Culture. – Axe, type IIIc (excav. no. 30). 11.2 × 6.7 × 0.98 cm, Cu 95.11%, Fe 1.81%, Pb 1.68%, Zn 0.62% (Hegde), innumerable small casting bubbles (*Pl. 1, 32*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Deo, S.B./Z.D. Ansari 1965, 185 fig. 57, 8; 59, 1; Hegde, K.T.M. 1964, 84–85; Deo, S.B./Z.D. Ansari 1961, 27 pl. 34, 1.

**33. Chandoli**, Dist. Pune, Mah., trench 3, layer 2, Malwa Culture. – Miscellaneous bangle (excav. no. 270). D 6.6 cm, wire D 0.6 cm (*Pl. 1, 33*). – Present whereabouts unknown. – Deo, S.B./Z.D. Ansari 1965, 114 fig. 57, 2.

**34. Chandoli**, Dist. Pune, Mah., trench 1, layer 2, Malwa Culture. Chisel (excav. no. 414). 16.5 × 1.6 × 1.1 cm (*Pl. 1, 34*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Deo, S.B./Z.D. Ansari 1961, 27 pl. 34, 6; idem. 1965, 113–115 fig. 57, 5; 59, 2.

**35. Chandoli**, Dist. Pune, Mah., trench 7, layer 2, Malwa Culture. – Chisel (excav. no. 48). L 10.5 cm, broken in the middle (*Pl. 1, 35*). – Present whereabouts unknown. – Deo, S.B. Deo/Z.D. Ansari 1965, 115 fig. 57, 7.

**36. Daimabad**, Dist. Ahmedabad, Mah. – Elephant sculpture. Based on the information supplied by the Bhils who accidentally discovered this together with three other metal sculptures, as well as with the help of stratigraphic investigations, the findspot seems to lie in the Late Harappan levels of section III. 26.3 × 13.8 (base) × 35.7 cm, Cu, As 1% +,<sup>3</sup> c. 25 kg.<sup>4</sup> The most naturalistic of the four sculptures, the elephant is posed standing on a rectangular base, which is supported by four vertical struts, pierced to accommodate the axles. The tusks seem slightly damaged but originally were probably not much more than mere stumps; the trunk

<sup>2</sup> Nanavati, J.M. et al. 1971, 16: layers 28–33; page 77: layer 15.

<sup>3</sup> Agrawal, D.P. 1982, 235. Based on new analyses carried

out by the chemist of the Archaeological Survey of India, S.A. Sali has disputed Agrawal's figures (Sali forthcoming).

<sup>4</sup> 20 kg: Sankalia, H.D. 1979, 92. 29 kg: Dhavalikar, M.K. 1978, 206.

curls slightly inward. Eyes appear as indentations, subsequently articulated by chasing. The ear laps are indented. Small gouges on the foot indicate nails. No genitals are visible. The small ears and firm corporeality suggest a young animal. The surface, damaged by corrosion but essentially intact, has been thoroughly cleaned. It is full of tiny bubbles and minor flaws (*Pl.* 2, 36). – ASI presently on loan to the Prince of Wales Mus. Bombay (74.3/1). – Dawn of Civ. pl. 43; Deshpande, M.N. 1979, 29 pl. 25 A; Rao, S.R. 1978, 62–63; Dhavalikar, M.K. 1978, 203–211 fig. 6; Sankalia, H.D. 1979, 91–93; Dhavalikar, M.K. 1980, 21–23; Sankalia, H.D. 1981, 23–24; Allchin, B./F.R. Allchin 1982, 279 fig. 10.14b.

**37. Daimabad**, Dist. Ahmedabad, Mah. – Buffalo sculpture. Provenance: see above. 24.0 × 16.0 × 26.5 cm, Cu 95.06%, Sn 4.43%, Pb –, tr: Fe, Ni,<sup>5</sup> 9.8 kg. Like the elephant sculpture, this figure is rendered standing and posed on a rectangular base. Stylistically it is a mixture of schematization and naturalistic observation. The massively cast body is separate from the four wheels and two axles, all of which are fitted together. On the head of the animal two raised and incised eyes, two dot-like nostrils and ribbed horns are visible. The muzzle is formed by a simple truncation of the head with a horizontal slit for the mouth. Below the horns two ears hang obliquely. Cloven hooves, fetlocks and hocks are differentiated. At the croup the skin flanking the tail is concavely contoured. A male sex organ is rendered. The front wheels are smaller than the rear ones. This figure has been cleaned and, owing to hundreds of tiny casting bubbles, has a rough surface. Damaged (anciently?) are the right rear strut and front right platform (*Pl.* 3, 37). – Purana Qila Coll. Delhi (74.76/2). – Dawn of Civ. pl. 45; Rao, S.R. 1978, 62–63; idem. 1978a, 74–75; Dhavalikar, M.K. 1978, 203–211 fig. 8; Deshpande, M.N. 1979, 29 pl. 25 C, 1; Sankalia, H.D. 1979, 91–93 pl. 15; Dhavalikar, M.K. 1980, 21–23; Sankalia, H.D. 1981, 23–24; Allchin, B./F.R. Allchin 1982, 279–280 fig. 10, 14c.

**38. Daimabad**, Dist. Ahmedabad, Mah. – Rhinoceros sculpture. Provenance: see no. 36. 24.7 × 15.1 × 29.0 cm (including wheels). Two analyses: Cu 98.93%, Sn 0.85%, Pb tr, tr: Fe, Ni. Cu 92.51%, Sn 6.51%, Pb tr, Fe tr, Ni –.<sup>6</sup> Unlike the elephant and buffalo, this figure does not stand on a base. Rather, the hind and forelegs each rest on an integrally cast platform. This massive sculpture is composed of seven separate parts which are pieced together: the body, two axles and four wheels. The front legs are extended and the hind ones half

crouched which results in the figure standing aslant. The head is long with a sharp protruding lower jaw and short horn. The eyes and brows are rendered at the front and not sides of the head, as they appear in nature. The skin appears to be folded behind the head and at the shoulder and hip joints. Two vertical folds on the back are joined at a ninety degree angle by a fold which runs horizontally. At the croup another L-shaped fold is visible. The treatment of the folds suggests a saddle or covering rather than stylized folds of the skin. No genitals are indicated. Nails are rendered on the feet by simple indentations. The tail bends slightly to the animal's left. The cleaned surface is intact and shows innumerable tiny bubbles (*Pl.* 3, 38). – ASI presently on loan to the Prince of Wales Mus. Bombay (74.6/3). – Dawn of Civ. pl. 44; Rao, S.R. 1978, 62–63, idem. 1978a, 74–75; Agrawal, D.P. et al. 1978, 45–46; Deshpande, M.N. 1979, 29 pl. 25 B; Dhavalikar, M.K. 1978, 203–211 fig. 7; idem. 1980, 21–23; Sankalia, H.D. 1979, 91–93; idem. 1981, 23–24; Allchin, B./F.R. Allchin 1982, 278–279 fig. 10, 14a.

**39. Daimabad**, Dist. Ahmedabad, Mah. – Chariot drawn by two bulls. Provenance: see no. 36. 50.5 × 17.2 × 23.2 cm, bull's hindleg: Cu 91.48%, Sn 5.36%, Pb 0.93%, Fe 0.49%, Ni tr; abdomen: Cu 93.08%, Sn 4.58%, Pb 0.32%, Fe 0.68%, Ni 0.39%; chariot wheel strut: Cu 93.97%, Sn 5.03%, Pb tr, Fe tr, Ni –.<sup>7</sup> Six component pieces form this sculptural group. The two humped bulls are cast together, the front and hind legs of which rest respectively on platforms. The yoke and pole fit snugly into a socket at the front of the chariot. The charioteer, the chariot itself and the axle struts form one piece. The wheels are fitted onto an axle.

Two humped bulls, side by side, draw the chariot. Each is rendered with the head held high, with the forehead slanting at some sixty degrees, with a slender rib cage and a croup exaggerated in size. The partially free standing tails issue from the croups vertically as to suggest attentiveness. These bulls are rendered with fetlocks, hocks and cloven hooves. The line of the forelegs continues in relief over the shoulder into the hump. Male sexual organs are manifest. Under each of the two platforms two lugs run lengthwise.

The yoke is dentated on its edges. It rests in front of the humps of the bulls.

The chariot floor is formed of a diamond-shaped platform from which a socketed rod extends to meet the pole. Flanking the platform, two anvil-like side panels extend downward as axle struts and stand erect

<sup>5</sup> S. A. Sali provided me with this unpublished analysis. Supra note 3.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

to form the superstructure. Issuing from the front parts of the panels a chevron-shaped cross member connects both sides of the chariot. At chest height of the charioteer the sides are joined by another horizontal member and rods converge at the front onto the back of a dog, which is posed standing on the pole. In his right hand the charioteer holds a curving whip, the upper surface of which is cross-hatched.

The eyes and nose of the charioteer are very large. At the back of his head the hair forms a horizontal bun. The border of the hair on the forehead is indicated by a fine line. With 'rubbery' arms the charioteer grasps the upper horizontal brace. He is steatopygous, with an elongated trunk, thin legs and small feet and is depicted nude except for an elaborate penis sheath.<sup>8</sup> This ends abruptly (broken?) at the lower end, extends vertically and forward and branches into a triangle with four rounded peaks on the top edge.

The metallic surface shows the same tiny casting bubbles as the other figures of this hoard (*Pl. 4, 39*). – ASI presently on loan to the Prince of Wales Mus. Bombay (74.76/4). – Dawn of Civ. pl. 46; Rao, S.R. 1978, 62–63; idem. 1978a, 74–75; Dhavalikar, M.K. 1978, 203–211 fig. 1–5; Agrawal, D.P. et al. 1978, 45; Sankalia, H.D. 1979, 91–93; Deshpande, M.N. 1979, 29 pl. 83; Dhavalikar, M.K. 1980, 21–23; Sankalia, H.D. 1981, 23–24; Agrawal, D.P. 1982, 233 fig. 142 ("doubtful"), 235; Allchin, B./F.R. Allchin 1982, 278–281 fig. 10, 15.

40. **Daimabad**, Dist. Ahmednagar, Mah., Phase IV, Malwa Culture.<sup>9</sup> Fragmentary pin head. 3.5 (pres.) × 2.4 cm (*Pl. 4, 40*). – Present whereabouts unknown. – Deshpande, M.N. 1959, 15. 17 pl. 21 B, 2; Dhavalikar, M.K. 1970, 38–40 fig. 1, 3; idem. 1979, 250.

41. **Daimabad**, Dist. Ahmednagar, Mah., Phase IV, Malwa Culture. – Knife. C. 18.0 (pres.) × 4.1 cm (*Pl. 4, 41*). – Present whereabouts unknown. – Deshpande, M.N. 1959, 15. 17 pl. 21 B, 3; Dhavalikar, M.K. 1970, 38–40 fig. 1, 2; idem. 1979, 250.

42. **Daimabad**, Dist. Ahmednagar, Mah. Phase V, Jorwe Culture. – Razor. C. 12.7 (pres.) × 6.3 cm, front part preserved, sharp on the front and left edges (*Pl. 4, 42*). – Present whereabouts unknown. – Deshpande, M.N. 1959, 15. 17 pl. 21 B, 5; Gupta, S.P. 1963, 149; Deshpande, M.N. 1979a, 31–34; Sali, S.A. 1981, 46–52.

43. **A.F. Inamgaon**, Dist. Pune, Mah. Settlement, Jorwe Culture. – 6 bangles, type IV. – A: D c. 8.8 cm, wire D 1.5 cm. B: D c. 9.0 cm, wire D 1.4 cm (*Pl. 4, 43*).

– Present whereabouts unknown. – Sankalia, H.D. et al. 1974, 26 pl. 42 B.

44. **Inamgaon**, Dist. Pune, Mah. Period II, early Jorwe Culture, child burial. – Copper beads. D of each 1.0 × 1.3 cm (uncleaned) (*Pl. 4, 44*). – Present whereabouts unknown. – Ansari, Z.D. et al. 1980, 41 pl. 20 A.

45. **Jorwe**, Dist. Ahmednagar, Mah. Found together with five other flat axes in a "painted pot" just before the excavation began. – Axe, type IIIa. 14.3 × 7.8 × 1.0 cm, 620.86 gm, break across the middle (*Pl. 5, 45*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D./S.B. Deo 1955, 157–158 fig. 60, 4 pl. 33, 4.

46. **Jorwe**, Dist. Ahmednagar, Mah. Context, supra no. 45. – Axe, type IIIa. 12.0 × 6.6 × 1.3 cm, 717.25 gm (*Pl. 5, 46*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D./S.B. Deo 1955, 157–158 fig. 60, 5 pl. 33, 5.

47. **Jorwe**, Dist. Ahmednagar, Mah. Context, supra no. 45. – Axe, type IIIa. 14.2 × 7.82 × 0.96 cm, corners and edges sharp, two chips missing from blade (*Pl. 5, 47*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D./S.B. Deo 1955, 150. 157–158 fig. 60, 6 pl. 33, 6.

48. **Jorwe**, Dist. Ahmednagar, Mah. Context, supra no. 45. – Axe, type IIIa. 6.9 (pres.) × 7.3 × 1.2 cm, 334.53 gm, front half preserved (*Pl. 5, 48*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D./S.B. Deo 1955, 157–158 fig. 60, 1 pl. 33, 1.

49. **Jorwe**, Dist. Ahmednagar, Mah. Context, supra no. 45. – Axe, type IIIa. 6.6 (pres.) × 7.5 × 1.2 cm, 368.55 gm, front half preserved (*Pl. 5, 49*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D./S.B. Deo 1955, 157–158 fig. 51, 2. pl. 33, 2.

50. **Jorwe**, Dist. Ahmednagar, Mah. Context, supra no. 45. – Axe, type IIIc. 14.4 × 7.2 × 1.3 cm, 742.77 gm, Cu 98.04%, Sn 1.78% (*Pl. 5, 50*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D./S.B. Deo 1955, 157–159 fig. 60, 3 pl. 33, 3.

51. **Jorwe**, Dist. Ahmednagar, Mah. Unstratified. Jorwe Culture. – Bangle, type IV. D 8.7, wire D 1.2 cm (*Pl. 5, 51*). – Present whereabouts unknown. – Sankalia, H.D./S.B. Deo 1955, 158–159 pl. 33, 7.

52. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A 8, 9, Phase I, Period I, Malwa Culture. – Axe, type IIIa (?) (excav. no. 2855). 6.4 (pres.) × 12.5 (pres.) × 0.95 cm, Cu 93.17%, Sn 3.26%, Fe 0.63%, Pb 2.28%, Zn 0.21%, front end preserved, cutting edge blunted (*Pl. 5,*

<sup>8</sup> Cf. the Gebel el-Araq knife for a parallel example. Vandiér, J. 1952, 535–539 fig. 359.

<sup>9</sup> Supra note 3.



- 52). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Hegde, K. T. M. 1964, 87; Sankalia, H. D. et al. 1971, 392–393 fig. 120, 5 pl. 25 B; Sankalia, H. D. 1974, 461–462 fig. 167, 5.
53. **Navdatoli**, Dist. West Nimar, M. P., trench IV, J, 9, Phase II, Period I, Malwa Culture. – Copper bead, pierced (excav. no. 3387). D 0.6 cm (*Pl.* 5, 53). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 394. 397 fig. 121, 15.
54. **Navdatoli**, Dist. West Nimar, M. P., trench IV, S, 8, bottom of Phase II, Period I, Malwa Culture. – Axe, type IIIa (excav. no. 13677). 11.5 (pres.) × 12.9 × 1.22 cm, Cu 93.20%, Sn 3.12%, Fe 0.57%, Pb 0.06%, Zn 0.38%, Co tr, Ni 0.18%, S –, not determined 0.49%, front half preserved, anciently battered and bent, one corner removed for analysis (*Pl.* 5, 54). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H. D. et al. 1971, 391–392. 451 fig. 120, 1 pl. 25 C; Sankalia, H. D. 1974, 461–462 fig. 167, 1.
55. **Navdatoli**, Dist. West Nimar, M. P., trench IV, S, 8, bottom of Phase II, Period I, Malwa Culture. – Axe, type IIIa (excav. no. 13678), 15.3 × 10.5 × 0.8 cm, 8 circular indentations ordered in a V-pattern, smooth surface (*Pl.* 5, 55). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H. D. et al. 1971, 391–392 fig. 120, 2 pl. 25 D; Sankalia, H. D. 1974, 461–462 fig. 167, 2.
56. **Navdatoli**, Dist. West Nimar, M. P., trench IV, S, 8, bottom of Phase II, Period I, Malwa Culture. – Axe, type Va variant (excav. no. 13676). 13.0 × 10.4 × 0.8 cm, Cu 93.0%, Sn 3.0% (*Pl.* 5, 56). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 391–392. 451 fig. 120, 3 pl. 25 E; 31.1; Sankalia, H. D. 1974, 461–462 pl. 167, 3.
57. **Navdatoli**, Dist. West Nimar, M. P., trench IV, S, 8, bottom of phase II, Period I, Malwa Culture. – Axe, type Va variant (excav. no. 13679) 16.1 × 11.7 × 0.8 cm, three circular indentations arranged in a row on both faces on the lower left edges (*Pl.* 5, 57). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H. D. et al. 1971, 391–392 fig. 120, 4 pl. 25 F; Sankalia, H. D. 1974, 461 fig. 167, 4.
58. **Navdatoli**, Dist. West Nimar, M. P., trench IV, A 17, 6, Phase II, Period I, Malwa Culture. – Miscellaneous bangle (excav. no. 853) Sankalia type a. D 5.5 × 6.3, wire D 0.4 cm (*Pl.* 5, 58). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 398–399 fig. 122, 5.
59. **Navdatoli**, Dist. West Nimar, M. P., trench IV, A, 7, Phase II, Period I, Malwa Culture. – Cone (excav. no. 618). H c. 1.4 D 2.4 cm, pierced on two sides (*Pl.* 5, 59). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 398. 399 fig. 122, 8.
60. **Navdatoli**, Dist. West Nimar, M. P., trench IV, A, 8, Phase II, Period I, Malwa Culture. – Copper bead, pierced (excav. no. 2471). D 1.1 cm (*Pl.* 5, 60). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 394. 397 fig. 121, 16.
61. **Navdatoli**, Dist. West Nimar, M. P., trench II, B 4, 2, Phase III, Period I, Jorwe Culture. – Arrowhead fragments (?) (excav. no. 5295). C. 2.3 × 1.7 × 0.3 cm (*Pl.* 5, 61). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 393–394 fig. 121, 1.
62. **Navdatoli**, Dist. West Nimar, M. P., trench II, P, 2, Phase III, Period I,<sup>10</sup> Jorwe Culture. – Fragmentary bangle, type III (excav. no. 2433) D 6.0 (pres.), wire D 0.5 × 0.3 cm, Cu 91.56%, Sn 4.37%, Fe 0.72%, Pb 2.56%, Zn 0.28%, Co tr, Ni 0.37%, S –, undetermined 0.14% (*Pl.* 5, 62). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H. D. et al. 1971, 398. 399. 451 fig. 122, 6; pl. 31, 2.
63. **Navdatoli**, Dist. West Nimar, M. P., trench IV, 0, 6, Phase III, Period I, Jorwe Culture (excav. no. 618a). – Cone of sheet metal. H c. 1.0 D 1.8 cm (*Pl.* 5, 63). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 398. 399 fig. 122, 7.
64. **Navdatoli**, Dist. West Nimar, M. P., trench IV, L, 2, Phase III, Period I, Jorwe Culture. – Finger ring (?) (excav. no. 10380), 2.0 × 0.15 cm, ends overlap (*Pl.* 5, 64). – Present whereabouts unknown. – Sankalia, H. D. et al. 1971, 394. 397 fig. 121, 17.
65. **Navdatoli**, Dist. West Nimar, M. P., trench IV, L, 2, Phase III, Period I, Jorwe Culture. – Finger ring (?) (excav. no. 10380a) 1.9 × 0.2 cm (*Pl.* 5, 65). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H. D. et al. 1971, 394. 397 fig. 121, 18; idem. 1974, 461–462 fig. 168, 18.
66. **Navdatoli**, Dist. West Nimar, M. P., trench I, A, 3, Phase III, Period I, Jorwe Culture. – Sword fragment (excav. no. 2052). L. 7.5 (pres.) × 4.0 cm (*Pl.* 5, 66). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H. D. et al. 1959, 30 fig. 14; idem. 1971, 393–395 fig. 121, 4 pl. 25 A; Sankalia, H. D. 1974, 461–463 fig. 168, 4.
67. **Navdatoli**, Dist. West Nimar, M. P., trench IB, G, 4, Phase III, Period I, Jorwe Culture. – Point (excav.

<sup>10</sup> Sankalia, H. D. et al. 1971, 398, mistakenly identified as Period III.

- no. 1196)  $4.4 \times 0.3$  cm (*Pl.* 5, 67). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–395 fig. 121, 6.
68. **Navdatoli**, Dist. West Nimar, M.P., trench IV, G, 3, Phase III, Period I, Jorwe Culture. – Point (excav. no. 1197),  $4.8 \times 0.5$  cm, rhomboid in section (*Pl.* 5, 68). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–395 fig. 121, 7.
69. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A, 3, Phase III, Period I, Jorwe Culture. – Wire with flattened head (excav. no. 1934) 2.1 D of head 1.3 cm, broken off (*Pl.* 5, 69). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–395 fig. 121, 5.
70. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A, 2, Phase III, Period I, Jorwe Culture. – Drill bit (?) (excav. no. 10950).  $4.0 \times 0.5$  cm, 10.36 gm, Cu 93.17%, Sn 3.26%, Zn 0.63%, Pb 2.28%, Fe 0.63%, Ni 0.22%, S –, undetermined 0.23%. (*Pl.* 5, 70). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Hegde, K.T.M. 1964, 87–88; Sankalia, H.D. et al. 1971, 393–394. 449 fig. 168, 3 pl. 31, 3.
71. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A, 2, Phase III, Period I, Jorwe Culture. – Point (excav. no. 10950a).  $8.4 \times 0.5 \times 0.4$  cm, intact (*Pl.* 5, 71). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–396 fig. 121.
72. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A, 2, Phase III, Period I, Jorwe Culture. – Point (excav. no. 10950b).  $8.9 \times 0.5$  cm, intact (*Pl.* 5, 72). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 393–394 fig. 121, 2.
73. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A, 2, Phase III, Period I, Jorwe Culture. – Point (excav. no. 10950c).  $10.2 \times 0.4$  cm (*Pl.* 5, 73). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–396. 397 fig. 121, 14.
74. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A, 2, Phase III, Period I, Jorwe Culture. – Rod (excav. no. 10950c)  $3.9$  (pres.)  $\times 0.4$  cm (*Pl.* 5, 74). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–396 fig. 121, 11.
75. **Navdatoli**, Dist. West Nimar, M.P., trench IV, A, 2, Phase III, Period I, Jorwe Culture. – Point (excav. no. 10950d).  $4.5 \times 0.3 \times 0.4$  cm (*Pl.* 5, 75). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–396 fig. 121, 12.
76. **Navdatoli**, Dist. West Nimar, M.P., trench IV, Z, 1, Phase IV, Period I, Malwa and Jorwe Ware. – Miscellaneous bangle (excav. no. 1385a), Sankalia type a. D 4.7, wire D 0.5 cm, one half preserved (*Pl.* 5, 76). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 398–399 fig. 122, 3.
77. **Navdatoli**, Dist. West Nimar, M.P., trench IV, Z, 1,

Phase IV, Period I, Malwa and Jorwe Ware. – Miscellaneous bangle (excav. no. 1385b) Sankalia type a. D 4.9, wire D 0.3 cm (*Pl.* 5, 77). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 398–399 fig. 122.

78. **Navdatoli**, Dist. West Nimar, M.P., trench IV, Z, 1, Phase IV, Period I, Malwa and Jorwe Ware. – Miscellaneous bangle (excav. no. 1385), Sankalia type a. – D 4.0, wire D 0.6 cm, one half preserved (*Pl.* 6, 78). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 398–399 fig. 122, 4.

79. **Navdatoli**, Dist. West Nimar, M.P., trench IV, L, 1, Phase IV, Period I, Malwa and Jorwe Ware. – Point (excav. no. 532),  $8.9 \times 0.4$  cm (*Pl.* 6, 79). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–396 fig. 121, 10.

80. **Navdatoli**, Dist. West Nimar, M.P., trench IV, S, 2, trench IV, S, 2, Phase IV, Period I, Malwa and Jorwe Ware. – Fishhook (excav. no. 1403),  $3.6 \times 0.25$  cm, complete, two pointed ends (*Pl.* 6, 80). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 394–395 fig. 121, 8.

81. **Navdatoli**, Dist. West Nimar, M.P., trench IV, L, 1, Phase IV, Period I, Malwa and Jorwe Ware. – Metal strip (excav. no. 2433b),  $7.6 \times 0.5 \times 0.2$  cm (*Pl.* 6, 81). – Present whereabouts unknown. – Sankalia, H.D. et al. 1971, 398–399 fig. 122.

82. **Navdatoli**, Dist. West Nimar, M.P., trench II, U, 2, Phase IV, Period I, Malwa and Jorwe Ware. – Fishhook fragment (excav. no. 7362),  $2.1 \times 0.3$  cm (*Pl.* 6, 82). – Present whereabouts unknown. – Sankalia H.D. et al. 1971, 394–395 fig. 121, 9.

83. **Nevasa**, Dist. Ahmednagar, Mah., Period III, Jorwe Culture. – Axe, type IIIc, c.  $12.9 \times 6.75$  cm (*Pl.* 6, 83). – Present whereabouts unknown. – Deo, S.B./Z.D. Ansari 1961, 20, pl. 31 B.

84. **Nevasa**, Dist. Ahmednagar, Mah., trench NVS, F, 12, Period III, Jorwe Culture. – Miscellaneous axe (excav. no. 8307), c.  $5.9 \times 4.2 \times 0.2$  cm (*Pl.* 6, 84). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D. et al. 1960, 416–419 fig. 186, 2.

85. **Nevasa**, Dist. Ahmednagar, Mah., Jorwe Culture, no further information. – Bangle, type IV, D 8.3 cm, wire D 1.09 cm (*Pl.* 6, 85). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Unpub.

86. **Nevasa**, Dist. Ahmednagar, Mah., trench NVS, E, 14, Period III, Jorwe Culture. – Chisel (excav. no. 6721).  $15.8 \times 1.0 \times 0.9$  cm, Cu 94.41%, Sn 2.72%, Pb 0.61%, Zn 0.13%, Ag 0.10%, Ni 0.20%, Mn 0.17% (*Pl.* 6, 86). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D. et al. 1960, 412 fig. 185, 7; 417–419 fig. 186, 6.

87. **Nevasa**, Dist. Ahmednagar, Mah., trench 26 B, bu-

- rial 40, Jorwe Culture. – 13 copper beads excav. no. 4330. D of the largest 0.78 cm × 0.5 cm (*Pl. 6, 87*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Unpub.
88. **A. B. Nevasa**, Dist. Ahmednagar, Mah. Jorwe Culture. – Two hollow copper beads A. 1.96 × 1.98 cm, B. 1.96 × 2.02 cm (*Pl. 6, 88 A. B.*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Unpub.
89. **Nevasa**, Dist. Ahmednagar, Mah., trench NVZ, Z, near burial no. 14, Period III, Jorwe Culture. – Bowl fragments (excav. no. 7129). Original D c. 27.9 cm, flat edge (*Pl. 6, 89*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1960, 420–421 fig. 187, 3.
90. **Nevasa**, Dist. Ahmednagar, Mah., trench NVS, H, 12, Period III, Jorwe Culture. – Rod, square in section (excav. no. 7523), 4.8 × 1.0 × 1.0 cm (*Pl. 6, 90*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune (?). – Sankalia, H.D. et al. 1960, 418–419 fig. 186, 8.
91. **Nevasa**, Dist. Ahmednagar, Mah., trench NVS, F, 11, Period III, Jorwe Culture. – Point (excav. no. 6721 a), 12.5 × 0.4 cm (*Pl. 6, 91*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Sankalia, H.D. et al. 1960, 412 fig. 185, 2; 418. 419 fig. 186, 7.
- SOUTHERN RAJASTHAN
92. **Ahar**, Dist. Udaipur, Raj., trench A, layer 18, Phase Ia, Banas Culture. – Miscellaneous wire (excav. no. 2852). D c. 3.9 cm, Th 1.2 cm (*Pl. 6, 92*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 199–200 fig. 121, 3.
93. **Ahar**, Dist. Udaipur, Raj., trench A, layer 13, Phase Ib, Banas Culture. – This type III d axe was found corroded together with three others (nos. 94–96) inside a clay pot. There is some confusion as to the exact excavation numbers (excav. no. 2257, A) C. 26.6 × 21.0 cm<sup>11</sup> (*Pl. 6, 93*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 203. 217 pl. 22, 1.
94. **Ahar**, Dist. Udaipur, Raj. Context: supra no. 93. – Axe, type III d (excav. no. 2257), 12.8 × 8.4 cm, 236.52 gm (*Pl. 6, 94*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 201. 203. 217. 225–228 fig. 122, 1 pl. 26, 1; Sankalia, H.D. 1974, 413 fig. 129, 1.
95. **Ahar**, Dist. Udaipur, Raj. Context: supra no. 93. – Axe, type III d (excav. no. 2255 c), 12.7 × 9.95 × 0.42 cm, fragile and thin with many casting flaws (*Pl. 6, 95*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Hegde, K. T. M. 1964, 88–89; Sankalia, H.D. et al. 1969, 201. 203. 217 fig. 122, 2 pl. 22, 3; Sankalia, H.D. 1974, 413. 417 fig. 129, 2.
96. **Ahar**, Dist. Udaipur, Raj. Context, supra no. 93. – Axe, type III d (exav. no. 2255 a), C. 14.7 × 15.2 cm (*Pl. 6, 96*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 199. 203, 217 pl. 22, 2.
97. **Ahar**, Dist. Udaipur, Raj. Excavated “from the same place” as nos. 93–96.<sup>12</sup> Axe, type III d? C. 6.0 × 2.0 cm (*Pl. 6, 97*). Gov’t. Mus. Ahar. – Agrawal, R. C. 1981 a, 29 pl. 6.
98. **Ahar**, Dist. Udaipur, Raj., trench H, layer 4, Phase Ib, Banas Culture. – Metal lump (excav. no. 1761). 4.5 × 4.9 × 1.5 cm (*Pl. 6, 98*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 200. 203 fig. 121, 8 pl. 21, 6.
99. **Ahar**, Dist. Udaipur, Raj., trench A, layer 9, Phase Ib, Banas Culture. – Two rings corroded together. 2.3 × 2.3 × 0.8 cm (*Pl. 6, 99*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 199–200 fig. 121, 1 pl. 21, 1.
100. **Ahar**, Dist. Udaipur, Raj., trench C, layer 3, Phase Ic, Banas Culture. – Wire (excav. no. 1154) 5.9 (pres.) × 0.6 cm (*Pl. 6, 100*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 199–200 fig. 121, 6 pl. 21, 4.
101. **Ahar**, Dist. Udaipur, Raj., trench C, layer 3, Phase Ic. – Rod (excav. no. 1510). L 1.2 cm, D wire 0.7 cm (*Pl. 6, 101*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 200. 203 fig. 121, 7 pl. 21, 5.
102. **Ahar**, Dist. Udaipur, Raj., trench C, layer 3, Phase Ic, Banas Culture. – Dauber (excav. no. 1827). 11.4 × 0.6 cm (*Pl. 6, 102*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 199–200 fig. 121, 5 pl. 21, 3.
103. **Ahar**, Dist. Udaipur, Raj. Excavated, no further information. – Double axe, type II. C. 11.0 × 3.0 cm (*Pl. 6, 103*). – Gov’t. Museum Ahar. – Agrawal, R. C. 1981 a, 29–30 pl. 6.
104. **A. B. Ahar**, Dist. Udaipur, Raj., unstratified. Two miscellaneous bangles (excav. no. 2256). A. c. 5.7 × 4.4 cm. B. c. 5.4 × 4.6 cm (*Pl. 6, 104 A. B.*). – Present whereabouts unknown. – Sankalia, H.D. et al. 1969, 199 fig. 121, 2.
105. **Budha Pushkar Lake Site**, Dist. Ajmer, Raj. Stray-

<sup>11</sup> In the excavation report four different celts are reproduced, two of which share the same inventory number.

<sup>12</sup> Sankalia, H.D. et al. 1969, 199 note 1.

find. – Fishhook. L c. 3.2 cm, wire D 0.3 cm (*Pl. 6, 105*). – Priv. Coll. Cambridge. – Agrawal, R.C./V.Kumar 1982, 127; Allchin, B./F.R. Allchin 1982, 21. 65. 69 fig. 4, 3b.

**106. Kayatha**, Dist. Ujjain, M.P., layer 7, trench KTH-A, house, Period I, Kayatha Culture. – Axe, type IIIa variant.  $14.2 \times 8.6 \times 1.51$  cm, six roughly circular indentations aligned parallel to the butt on one face, broken across the middle, butt end battered (*Pl. 6, 106*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Ansari, Z.D./M.K. Dhavalikar 1971, 340 pl. 4; Sankalia, H.D. 1974, 422–424 fig. 137 B; Ansari, Z.D./M.K. Dhavalikar 1975, 145–151 fig. 82 pl. 23 B; Dhavalikar, M.K. 1979, 232 pl. 1.

**107. Kayatha**, Dist. Ujjain, M.P., layer 7, trench KTH-A, house, Period I. – Axe, type IIIa variant.  $10.6 \times 7.2 \times 10.46$  cm 587 gm, three roughly circular indentations aligned the butt on one face, butt slightly battered (*Pl. 6, 107*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune (1172). – Ansari, Z.D./M.K. Dhavalikar 1971, 340 pl. 4; Sankalia, H.D. 1974, 422–424 fig. 137 A; Ansari, Z.D./M.K. Dhavalikar 1975, 145–151 fig. 82 pl. 23 A; Dhavalikar, M.K. 1979, 232 pl. 1.

**108. Kayatha**, Dist. Ujjain, M.P., layer 7, trench KTH-A, house, Period I. – Bangle, type I. D 6.5 cm, wire D

0.62 cm (*Pl. 6, 108*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Ansari, Z.D./M.K. Dhavalikar 1971, 338–340 pl. 5; Sankalia, H.D. 1974, 428–429 fig. 137 C; Ansari, Z.D./M.K. Dhavalikar 1975, 145–148 fig. 82 c pl. 22; Dhavalikar, M.K. 1979, 232 pl. 2.

**109–119. Kayatha**, Dist. Ujjain, M.P., layer 7, trench KTH-A, house, Period I. – Bangles, type II (*Pl. 6, 109–114; 7, 115–119*). – Present whereabouts unknown. – Ansari, Z.D./M.K. Dhavalikar, 1971, 338–340 pl. 5; idem. 1975, 145–148 pl. 22.

**120. Kayatha**, Dist. Ujjain, M.P., trench A, layer 7, Period I, Kayatha Culture. – Bangle, type III (excav. no. 932-C). D 6.6 cm, wire D 0.5 cm, 35.0 gm (*Pl. 7, 120*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Ansari, Z.D./M.K. Dhavalikar 1971, 338–340 pl. 5; Sankalia, H.D. 1974, 428–429 fig. 137 D; Ansari, Z.D./M.K. Dhavalikar 1975, 145–148 pl. 22; Dhavalikar, M.K. 1979, 232 pl. 2.

**121. Kayatha**, Dist. Ujjain, M.P., trench A, layer 7, Period I, Kayatha Culture. – Miscellaneous bangle (excav. no. KTH 68). D 4.33 cm, wire D 0.4 cm, 11 gm (*Pl. 7, 121*). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Ansari, Z.D./M.K. Dhavalikar 1971, 338–340 pl. 5; idem. 1975, 145–148; Dhavalikar, M.K. 1979, 232 pl. 2.

#### NORTHERN RAJASTHAN – SOUTHERN HARYANA

**122–141. Ganeshwar**, Dist. Sikar, Raj.<sup>13</sup> Excavated, Ganeshwar Culture. – Arrowheads. L 2.9–6.1 cm, traces of light coloured adhesive visible; a 'shadow' remains in the patina where the shaft was fastened to the head (*Pl. 7, 122–141*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1978, 123 pl. 23; idem. 1979, 159–160; Agrawal, R.C./V.Kumar 1982, 127 pl. 11, 1. 2.

**142–154. Ganeshwar**, Dist. Sikar, Raj. Excavated, Ganeshwar Culture. – Fourteen axes, type IVb. L 20–25 cm, many show symmetrical patterns of dots on one of the faces near the butt, heavily corroded (*Pl. 7, 142–149; 8, 150–154*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1980, 91; idem. 1981a, 27–29 pl. 5; idem. 1981b, 60–61; Agrawal, R.C./V.Kumar 1982, 128 pl. 11, 5. 6.

**155. Ganeshwar**, Dist. Sikar, Raj. Excavated, Ganeshwar Culture. – Bangle, type II. D 6.7 cm, wire D 0.6 cm (*Pl. 8, 155*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1980, 91; idem. 1981a, 27–29 pl. 5; idem. 1981b, 60–61.

**156–173. Ganeswhar**, Dist. Sikar, Raj. Excavated, Ganeshwar Culture. – Eighteen blade fragments. L 2.7–5.6 cm (pres.), heavily corroded (*Pl. 8, 156–173*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C./V.Kumar 1982, 127 pl. 11, 3. **174–175. Ganeshwar**, Dist. Sikar, Raj. Excavated, Ganeshwar Culture. – Two nail headed points. L 7.9 and 6.7 cm (*Pl. 8, 174, 175*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1980, 91; idem. 1981a, 27–29 pl. 5; idem. 1981b, 60–61.

**176–188. Ganeshwar**, Dist. Sikar, Raj. Excavated, Ganeshwar Culture. – Fishhooks. L 1.0–3.7 cm (*Pl. 8, 176–188*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C./V.Kumar 1982, 127 pl. 11, 4.

**189–197. Ganeshwar**, Dist. Sikar, Raj. Excavated, Ganeshwar Culture. – 9 miscellaneous points and chisels. L 2.5–6.8 cm (*Pl. 8, 189–197*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C./V.Kumar 1982, 128 pl. 11, 7.

<sup>13</sup> No. 725, in fact, stems from Ganeshwar and not Kul-

hade-ka-Johade, as previously published. Orally expressed information, R.C. Agrawal.

198. **Kurda**, Dist. Nagaur, Raj. – Double axe, type II. – C.  $16.5 \times 5.8$  cm (*Pl.* 8, 198). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89–92 pl. 2; idem. 1981a, 29 pl. 7; Agrawal, D. P. 1982, 209 fig. 122.
199. **Kurada**, Dist. Nagaur, Raj. – Double axe, type II. C.  $15.3 \times 5.6$  cm (*Pl.* 8, 199). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89 pl. 2; idem. 1981a, 29 pl. 7.
200. **Kurada**, Dist. Nagaur, Raj. – Double axe, type II. C.  $14.8 \times 3.8$  cm (*Pl.* 8, 200). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89–92 pl. 2; idem. 1981a, 29 pl. 7.
201. **Kurada**, Dist. Nagaur, Raj. – Double axe, type II. C.  $7.6 \times 2.8$  cm (*Pl.* 8, 201). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89–92 pl. 2; idem. 1981a, 29 pl. 7.
202. **Kurada**, Dist. Nagaur, Raj. – Bangle, type II. D c. 7.1, wire D 0.6 cm (*Pl.* 8, 202). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89–92 pl. 2; idem. 1981a, 29 pl. 7.
203. **Kurada**, Dist. Nagaur, Raj. – Bangle, type II. D c. 6.5, wire D 0.5 cm. (*Pl.* 8, 203). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89–92 pl. 2; idem. 1981a, 29 pl. 7.
204. **Kurada**, Dist. Nagaur, Raj. – Axe, type IIIc. C.  $16.5 \times 8.7$  cm, four bilaterally symmetrically arranged circular indentations on one face (*Pl.* 8, 204). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89–92 pl. 2; idem. 1981a, 29 pl. 7; Agrawal, D. P. 1982, 209 fig. 129.
205. **Kurada**, Dist. Nagaur, Raj. – Bar. C.  $19.5 \times 2.2$  cm (*Pl.* 8, 205). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R. C. 1980, 89–92; idem. 1981a, 29 pl. 7; Agrawal, D. P. 1982, 209 fig. 122.
206. **Kurada**, Dist. Nagaur, Raj. – Hemispherical bowl. D c. 13.0, H 5.7 cm, rolled edge (*Pl.* 9, 206). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, D. P. 1982, 209 fig. 122.
207. **Kurada**, Dist. Nagaur, Raj. – Hemispherical bowl. D c. 13.0 cm, carinated shoulder and rolled edge (*Pl.* 9, 207). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Sankalia, H. D. 1979, 51; Agrawal, R. C. 1980, 89–91 pl. 1; idem. 1981a, 29 pl. 8 (left).
208. **Kurada**, Dist. Nagaur, Raj. – Bowl with everted carinated rim and an open spout. L c. 18.15, H 9.5 cm (*Pl.* 9, 208). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Anon. 1961, 66 pl. 77B; Sankalia, H. D. 1979 xv, 51 pl. 3a; Agrawal, R. C. 1980, 89–90 pl. 1; idem. 1981a, 29 pl. 8 (right); Agrawal, D. P. 1982, 209 fig. 122.
209. **Mitathal**, Dist. Bhiwani, Har. Period IIA (Harappan). – Wire (excav. no. MTL-1, 522).  $5.2 \times 0.3$  cm, Cu 98.57%, Fe 1.13%, Ni-tr. (*Pl.* 9, 209). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 64 pl. 19, 1.
210. **Mitathal**, Dist. Bhiwani, Har. Period IIA (Harappan). – Bangle, type I (excav. no. MTL-1, 304). D 5.5, wire D 0.8 cm, Cu 98.43%, Fe 1.14%, Ni tr, As tr (*Pl.* 9, 210). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 62–63, 65 fig. 14A, 4 pl. 18, 3.
211. **Mitathal**, Dist. Bhiwani, Har. Period IIB (Late Harappan). – Double axe, type II (excav. no. MTL-1, 129).  $16.3 \times 4.1 \times 0.4$  cm, Cu 98.48%, Fe 1.15%, Ni tr (*Pl.* 9, 211). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 64–66 fig. 14A, 7 pl. 19, 3.
212. **Mitathal**, Dist. Bhiwani, Har. Period IIB (Late Harappan). – Axe, type IIIa (excav. no. MTL-1, 75).  $8.5$  (pres.)  $\times 5.3 \times 1.0$  cm, Cu 98.31%, Fe 1.19%, Ni tr (*Pl.* 9, 212). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 74–66 fig. 14A, 6.
213. **Mitathal**, Dist. Bhiwani, Har. Period IIB (Late Harappan). – Bangle, type II (excav. no. MTL-1, 68). D c. 7.5 cm, wire D c. 0.9 cm, Cu 98.35%, Fe 1.2%, Ni tr, As tr (*Pl.* 9, 213). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 63, 65–66 Fig. 1, 2 pl. 18, 4.
214. **Mitathal**, Dist. Bhiwani, Har. Period IIB (Late Harappan). – Miscellaneous bangle (excav. no. MTL-1, 275). D 6.0 cm, wire D 0.5 cm, Cu 98.33%, Fe 1.26%, Ni tr, corroded, irregular in section (*Pl.* 9, 214). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 63, 65 fig. 14A, 3 pl. 18, 2.
215. **Mitathal**, Dist. Bhiwani, Har., unstratified. – Miscellaneous bangle (excav. no. MTL-1, 186). D 5.9 (pres.) cm, wire D 1.0 cm (*Pl.* 9, 215). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 65 fig. 14A, 2 pl. 18, 5.
216. **Mitathal**, Dist. Bhiwani, Har., unstratified. – Miscellaneous bangle (excav. no. MTL-1, 16). D 5.5 (pres.) cm, wire D 0.7 cm, corroded (*Pl.* 9, 216). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Suraj Bhan 1975, 62, 63, 65 fig. 14A, 1 pl. 18, 1.
217. **Mitathal**, Dist. Bhiwani, Har. Excavated. – Axe, type IIIa. C.  $16.0 \times 11.6$  cm, badly corroded, butt end chipped (*Pl.* 9, 217). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Unpub.
218. **Mitathal**, Dist. Bhiwani, Har. Excavated. – Axe, type IVa. C.  $24.5 \times 5.8$  cm, badly corroded and broken (*Pl.* 9, 218). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Unpub.

- 219. Mitathal**, Dist. Bhiwani, Har. Excavated. – Bar. C. 25.08 × 2.53 cm, badly corroded and broken (*Pl.* 9, 219). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Unpub.
- 220. Mitathal**, Dist. Bhiwani, Har. Excavated. – Knife fragment. C. 13.09 (pres.) × 4.73 cm, back half preserved, broken, badly corroded, Harappan (?) (*Pl.* 9, 220). – Dept. of Ancient History and Archaeology, Kurukshetra University. – Unpub.
- 221. Sanghol**, Dist. Ludhiana, Punj., large enclosure of Rm. 2, Phase 4, Bara Culture. – 92 miniature gold beads. D of restrung necklace c. 3.6 cm (*Pl.* 9, 221). – Punjab Dept. of Antiquities (Patiala Mus.). – Sharma, Y.D./G.D. Sharma 1982, 79 pl. 10, 3.
- GANGES-YAMUNA DOAB
- 222. Bahadarabad**, Dist. Saharanpur, U.P. – Axe, type IV a. 17.0 × 4.1 × 0.85 cm, 305 gm, analysed, circular indentations aligned near the butt end on one face, casting flaw near the butt (*Pl.* 9, 222). – Purana Qila Coll. Delhi (74.11/2). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 9; Agrawal, D.P. 1982, 207 fig. 121.
- 223. Bahadarabad**, Dist. Saharanpur, U.P. – Axe, type IV a. 10.2 × 4.1 × 0.6 cm, 115 gm, three circular indentations aligned to the butt on one face, hammer marks visible (*Pl.* 9, 223). – Purana Qila Coll. Delhi (74.11/4). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 5; Agrawal, D.P. 1982, 207 fig. 121.
- 224. Bahadarabad**, Dist. Saharanpur, U.P. – Axe, type Vb. 15.5 × 12.2 × 1.3 cm, 960 gm, analysed, casting flaws on the cutting edge (*Pl.* 9, 224). – Purana Qila Coll. Delhi (74.11/3). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 4; Agrawal, D.P. 1982, 207.
- 225. Bahadarabad**, Dist. Saharanpur, U.P. – Miscellaneous axe. 18.2 × 4.0 × 0.2–0.1 cm, 80 gm, corroded and bent (*Pl.* 9, 225). – Purana Qila Coll. Delhi (74.11/5). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 10; Agrawal, D.P. 1982, 207 fig. 121.
- 226. Bahadarabad**, Dist. Saharanpur, U.P. – Miscellaneous axe. 16.2 × 3.2 × 0.14 cm, 40 gm, edges sharp, three indentations near the butt end on one face (*Pl.* 9, 226). – Purana Qila Coll. Delhi (74.11/6). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 8; Agrawal, D.P. 1982, 207 fig. 121.
- 227. Bahadarabad**, Dist. Saharanpur, U.P. – Miscellaneous axe. 12.0 × 3.3 × 0.24 cm, 40 gm, two circular indentations near the butt on one face, one corner broken (*Pl.* 9, 227). – Purana Qila Coll. Delhi (74.11/7). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 6; Agrawal, D.P. 1982, 207 fig. 121.
- 228. Bahadarabad**, Dist. Saharanpur, U.P. – Miscellaneous axe. 13.5 × 3.3 × 0.77 cm, 25 gm, bent (*Pl.* 9, 228). – Purana Qila Coll. Delhi (74.11/8). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 7; Agrawal, D.P. 1982, 207 fig. 121.
- 229. Bahadarabad**, Dist. Saharanpur, U.P. – Bangle, type I. D 8.8 × 8.3 cm, wire D 1.0 cm, 135 gm, smooth surface (*Pl.* 9, 229). – Purana Qila Coll. Delhi (74.11/11). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 3; Agrawal, D.P. 1982, 207 fig. 121.
- 230. Bahadarabad**, Dist. Saharanpur, U.P. – Bangle, type II. D 5.5 × 6.5 cm, wire D 0.5–0.6 cm, 20 gm, fine scratches run the length of the wire (*Pl.* 9, 230). – Purana Qila Coll. Delhi (74.11/9). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 1; Agrawal, D.P. 1982, 207 fig. 121.
- 231. Bahadarabad**, Dist. Saharanpur, U.P. – Bangle, type II. D 6.4 × 6.2 cm, wire D 1.2 cm, 90 gm, irregularly shaped (*Pl.* 9, 231). – Purana Qila Coll. Delhi (74.11/13). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 1; Agrawal, D.P. 1982, 207 fig. 121.
- 232. Bahadarabad**, Dist. Saharanpur, U.P. – Bangle, type III. D 6.1 × 6.3 cm, wire D 0.5 × 0.6 cm, 20 gm, surface smoothly formed (*Pl.* 9, 232). – Purana Qila Coll. Delhi (74.11/10). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 1; Agrawal, D.P. 1982, 207 fig. 121.
- 233. Bahadarabad**, Dist. Saharanpur, U.P. – Bangle, type III. D 6.0 × 6.7 cm, wire D 0.53 × 0.56 cm, 20 gm (*Pl.* 9, 233). – Purana Qila Coll. Delhi (74.11/12). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 2; Agrawal, D.P. 1982, 207 fig. 121.
- 234. Bahadarabad**, Dist. Saharanpur, U.P. – Lance head. 47.9 × 5.2 (pres.) × 1.42 cm, 1765 gm, irregularly made, concave edges, corroded raw surface (*Pl.* 10, 234). – Purana Qila Coll. Delhi (74.11/1). – Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 11; Agrawal, D.P. 1982, 207 fig. 121.
- 235. Baharia**, Dist. Shahjahanpur, U.P. – Harpoon, type II. 26.9 (pres.) × 6.7 × 2.0 cm, 690 gm, dark green patina, tip sawn off (for analysis) (*Pl.* 10, 235). – Kausambi Mus. Allahabad (H/2-Pr). – Sharma, G.R. 1972, 42–43 pl. 2A; Misra, V.D./B.B. Misra 1977, 438 fig. 1, 5; Misra, V.D. 1977, 123 pl. 13.
- 236. Baharia**, Dist. Shahjahanpur, U.P. – Miscella-



- neous sword.  $51.7 \times 10.32$  (pres.)  $\times 1.1$  cm, 1005 gm, slightly concave edges, well-formed, very good workmanship, one tip of the hilt broken off, dark green patina (*Pl. 10, 236*). – Kausambi Mus. Allahabad (no no.). – Sharma, G.R. 1972, 42–43 pl. 2a; Misra, V.D. 1977, 123 pl. 14; Misra, V.D./M.M. Misra 1977, 438 fig. 2. 5.
- 237. Bargaon**, Dist. Saharanpur, U.P. Excavated from a mixture of Harappan pottery and OCP. – Bangle, type IV. D  $5.0 \times 5.5$  cm, wire D 0.7 cm (*Pl. 10, 237*). – Purana Qila Coll. Delhi, on study with K.N. Dikshit. (no no.). – Deshpande, M.N. 1967, 56–57 pl. 36A.
- 238. Bargaon**, Dist. Saharanpur, U.P., context; supra no. 237. – Miscellaneous bangle, D c. 4.6 cm (*Pl. 10, 238*). – Purana Qila Coll. Delhi (no no.). – Deshpande, M.N. 1967, 56–57 pl. 36A.
- 239. Bisauli**, Dist. Badaun, U.P. – Anthropomorph, type I.  $23.2 \times 35.2 \times 0.7$  cm, 1250 gm, in section bilaterally symmetrical, surface pattered on both sides with numerous thin gouges, copper-red colour, cleaned (?) (*Pl. 11, 239*). – Bharat Kala Bhavan (no no.). – Lal, B.B. 1951, 25 fig. 2, 8 pl. 5, 1; idem. 1953, 91 pl. 30, 1; Mode, H. 1959 pl. 76; Müller-Karpe, H. 1980 pl. 564A, 4; Agrawal, D.P. 1982, 206 pl. 120.
- 240. Bisauli**, Dist. Badaun, U.P. – Anthropomorph, type II.  $42.8 \times 38.2 \times 2.2$  cm, c. 6 kg, analysed, surface patterning on both sides, patterning runs parallel to the periphery of the 'head', copper-red colour (*Pl. 11, 240*). – Bharat Kala Bhavan, Varanasi (no no.). – Lal, B.B. 1951, 24 fig. 2, 1 pl. 6A; Müller-Karpe, H. 1980 pl. 564, 2; Agrawal, D.P. 1982, 204 fig. 119, 2.
- 241. Bisauli**, Dist. Badaun, U.P. – Anthropomorph, type II variant.  $30.2 \times 27.9 \times 0.7$  cm, 1000 gm, patterning gouged into both faces, mediocre workmanship, cast and smithed, copper-red colour, Cu 98.77%, Ni 0.66%. – Municipal Mus. Allahabad (4) (*Pl. 10, 241*). – ASI photo, U.P. vol. 52 no. 273; Lal, B.B. 1951, 23–24 fig. 25; Müller-Karpe, H. 1980 pl. 564A, 3.
- 242. Bisauli**, Dist. Badaun, U.P. – Axe, type IVa.  $29.3 \times 7.1 \times 0.4$  cm, 335 gm, spalted surface, cleaned. – Bharat Kala Bhavan, Varanasi (no no.) (*Pl. 10, 242*). – Lal, B.B. 1951, 24–25 fig. 2, 7 pl. 5, 3; idem. 1953, 93 pl. 30, 3; Mode, H. 1959, 255 pl. 76; Müller-Karpe, H. 1980 pl. 564A, 1; Agrawal, D.P. 1982, 206 fig. 120.
- 243. Bisauli**, Dist. Badaun, U.P. – Harpoon, type II.  $43.8 \times 6.45 \times 2.1$  cm, 945 gm, casting flaws, cleaned. – Bharat Kala Bhavan, Varanasi (no no.) (*Pl. 10, 243*). – Lal, B.B. 1951, 23–27 fig. 2, 3 pl. 5, 2; idem. 1953, 92 fig. 5, 5 pl. 30, 2; Gordon, D.H. 1958, 136 fig. 17.5; Mode, H. 1959, 255 pl. 76; Rau, W. 1974, 66 fig. 4; Müller-Karpe, H. 1980 pl. 564A, 5; Agrawal, D.P. 1982, 204 fig. 119, 3; 120.
- 244. Chirand**, Dist. Saran, Bi. Period II (Chalcolithic). – Miscellaneous wire. C.  $4.8 \times 5.6$  cm (*Pl. 10, 244*). – Present whereabouts unknown. – Verma, B.S. 1974, 7 pl. 11, 5.
- 245. Dhaka**, Dist. Shahjahanpur, U.P. – Axe, type Va.  $21.8 \times 16.7 \times 0.9$  cm, 1920 gm, front corners and butt recently damaged, surface accretions and very dark green patina (*Pl. 12, 245*). – State Mus. Lucknow (0.217). – Lal, B.B. 1951, 27 fig. 3, 12 pl. 7A, 1.
- 246. Dhaka**, Dist. Shahjahanpur, U.P. – Axe, type Va.  $21.5 \times 16.0$  (pres.)  $\times 0.85$  cm, 1680 gm, right edge hacked away, mottled patina (*Pl. 12, 246*). – State Mus. Lucknow (0.218). – Lal, B.B. 1951, 27 pl. 7A, 5.
- 247. Dhaka**, Dist. Shahjahanpur, U.P. – Axe, type Va.  $21.5 \times 17.6 \times 0.8$  cm, 1805 gm, right edge recently damaged, spalling, green patina. – State Mus. Lucknow (0.219), (*Pl. 12, 247*). – Lal, B.B. 1951, 27 fig. 3, 10 pl. 7A, 2; Müller-Karpe, H. 1980 pl. 566B, 2.
- 248. Dhaka**, Dist. Shahjahanpur, U.P. – Axe, type Va.  $21.9 \times 16.9$  (pres.)  $\times 0.9$  cm, 1980 gm, right front corner battered (*Pl. 12, 248*). – State Mus. Lucknow (0.220). – Lal, B.B. 1951, 27 pl. 7A, 4.
- 249. Dhaka**, Dist. Shahjahanpur, U.P. – Axe, type Va.  $17.5 \times 14.8 \times 0.9$  cm, 1280 gm, cracked, left front and butt corners damaged (*Pl. 12, 249*). – State Mus. Lucknow (0.221). – Lal, B.B. 1951, 27 fig. 3, 6 pl. 7A, 3; Müller-Karpe, H. 1980 pl. 566B, 1.
- 250. Etawah**, Dist. Varanasi, U.P. – Axe, type Vd.  $17.0 \times 14.2 \times 1.45$  cm, 1850 gm, dull edges, somewhat irregularly shaped, chipping evidently ancient, analysed, thick green patina with some blue efflorescence (*Pl. 12, 250*). – Bharat Kala Bhavan (2/20364). – Ghosh, A. 1956, 61.
- 251. Etawah**, Dist. Varanasi, U.P. – Axe, type Vd.  $15.5 \times 11.4 \times 1.2$  cm, 1210 gm, one corner recently damaged, thick light green patina (*Pl. 13, 251*). – Bharat Kala Bhavan (2/20365). – Ghosh, A. 1956, 61.
- 252. Etawah**, Dist. Varanasi, U.P. – Axe, type Vd.  $17.7 \times 12.7 \times 1.05$  cm, 1300 gm, butt end anciently sharpened, slightly planoconvex in shape, cutting edge anciently battered, thick light green patina (*Pl. 13, 252*). – Bharat Kala Bhavan (2/20366). – Ghosh, A. 1956, 61.
- 253. Etawah**, Dist. Varanasi, U.P. – Axe, type Vd.  $16.5 \times 12.1 \times 1.3$  cm, 1440 gm, analysed, thick light green patina, some blue efflorescence (*Pl. 13, 253*). – Bharat Kala Bhavan (2/20367). – Ghosh, A. 1956, 61.
- 254. Etawah**, Dist. Varanasi, U.P. – Axe, type Vd.  $15.4 \times 13.3 \times 1.2$  cm, 1540 gm, thick light green patina (*Pl. 13, 254*). – Bharat Kala Bhavan (2/20368). – Ghosh, A. 1956, 61.
- 255. Fathgarh**, Dist. Farrukhabad, U.P. – Miscellaneous anthropomorph.  $60.7 \times 39.1 \times 0.57$  (upper edge) cm, 2157 gm (Anderson), both sides show chased patterning, on the reverse the longer arm is patterned

- at its extremity, arms broken recently, metal fatiguing at bend points, left leg anciently broken, hammered out of shape, green and dark green patina on obverse, green patina on reverse (*Pl. 15, 255*). – Indian Mus. Calcutta (A 21406 Fh 5). – Anderson, J. 1883, 408; Smith, V.A. 1905, 232, 238 pl. 2, 5; Brown, J. Coggin 1917, 9, 145; Marshall, J. 1922 pl. 10, 77.
- 256. Fathgarh**, Dist. Farrukhabad, U.P. – Sword, type I.  $76.2 \times 9.0$  (blade)  $\times 1.4$  cm, 2124 gm (Brown), edges gouged, antennae bent out of shape (*Pl. 14, 256*). – Indian Mus. Calcutta (Fh 1). – Anderson, J. 1883, 405–406; Smith, V.A. 1905, 232 pl. 3, 3; Brown, J. Coggin 1917, 144–145; von Heine-Geldern, R. 1936, 101–102 fig. 32; Naik, A.V. 1943, 376–378 fig. 6.
- 257. Fathgarh**, Dist. Farrukhabad, U.P. – Sword, type I.  $73.4 \times 7.4$  (blade)  $\times 1.4$  cm, 2380 gm (Brown), tip slightly broken off (*Pl. 14, 257*). – Indian Mus. Calcutta (A 21567 Fh 2). – Smith, V.A. 1905, 232 pl. 3, 5; Brown, J. Coggin 1917, 145; Marshall, J. 1922 pl. 10, 19; von Heine-Geldern, R. 1936, 101–102 fig. 32; Naik, A.V. 1943, 376–378 fig. 4; Piggott, S. 1944, 180 fig. 4; Lal, B.B. 1953, 92 fig. 5, 2; Gordon, D.H. 1958, 136 fig. 17, 2.
- 258. Fathgarh**, Dist. Farrukhabad, U.P. – Sword, type I.  $64.9 \times 6.9$  (blade)  $\times 0.95$  cm, 1238 gm (Brown), some chips missing from the blade, antenna bent out of shape, otherwise well-preserved (*Pl. 14, 258*). – Indian Mus. Calcutta (A 21566 Fh 3). – Anderson, J. 1883, 407; Smith, V.A. 1905, 232 pl. 3, 4; Brown, J. Coggin 1917, 145; von Heine-Geldern, R. 1936, 101–102 fig. 32; Naik, A.V. 1943, 376–378 fig. 5; Gordon, D.H. 1958, 73 pl. 1, 8.
- 259. Fathgarh**, Dist. Farrukhabad, U.P. – Sword, type I var.  $74.0 \times 7.38$  (pres.)  $\times 1.4$  cm, 2112 gm (Brown), "... lead and traces of tin" (analysed), small chips from the edges, in plan perhaps intentionally slightly asymmetrical, metal sample bored through the base and cut off from the butt (*Pl. 14, 259*). – Indian Mus. Calcutta (A 21565 Fh 4). – Anderson, J. 1883, 405, 407, 488; Smith, V.A. 1905, 232, 237 pl. 3, 1; Brown, J. Coggin 1917, 145; Marshall, J. 1922 pl. 10, 20; Piggott, S. 1944, 280 fig. 3; Gordon, D.H. 1950, 73 fig. 1, 10.
- 260. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IIIa.  $17.8 \times 12.5 \times 1.0$  cm, 1215 gm, good workmanship, edges somewhat battered, surface recently scoured (*Pl. 13, 260*). – State Mus. Lucknow (56. 336. A). – Anon. 1957, 74 pl. 87D, 2.
- 261. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IIIa.  $17.1 \times 12.5 \times 1.2$  cm, 1250 gm, regular in form, 3 circular indentations aligned on one face, surface recently scoured (*Pl. 13, 261*). – State Mus. Lucknow (56.336. B). – Anon. 1957, 74 pl. 87C, 3.
- 262. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IIIa.  $16.9 \times 11.1 \times 1.0$  cm, 950 gm, well-formed, 2 circular indentations on one face, cutting edge recently chipped, surface recently scoured (*Pl. 13, 262*). – State Mus. Lucknow (56. 336. C). – Anon. 1957, 74.
- 263. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IIIa.  $15.9 \times 10.5 \times 0.95$  cm, 800 gm, modernly (?) cracked, burned and cutting edge chipped, surface recently scoured (*Pl. 13, 263*). – State Mus. Lucknow (56. 336. D). – Anon. 1957, 74 pl. 87C, 1.
- 264. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IIIa.  $15.8 \times 11.2 \times 0.7$  cm, 655 gm, warped, heavy green patina (*Pl. 13, 264*). – State Mus. Lucknow (56. 336. E). – Anon. 1957, 74 pl. 87C, 2.
- 265. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IVa.  $11.2$  (pres.)  $\times 6.27$  (pres.)  $\times 0.51$  cm, 185 gm, front end preserved, edges fairly sharp, green patina (*Pl. 15, 265*). – State Mus. Lucknow (56. 336. 9). – Anon. 1957, 74.
- 266. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IVa.  $11.8$  (pres.)  $\times 5.8 \times 0.49$  cm, 160 gm, front end preserved, recent break and battering of sides, thick green patina (*Pl. 15, 266*). – State Mus. Lucknow (56. 336. 10). – Anon. 1957, 74.
- 267. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IVa.  $7.9$  (pres.)  $\times 6.1 \times 0.56$  cm, 140 gm, front end preserved, recent break, green patina (*Pl. 15, 267*). – State Mus. Lucknow (56. 336. 11). – Anon. 1957, 74.
- 268. Gandhauli**, Dist. Sitapur, U.P. – Axe, type IVa.  $7.3$  (pres.)  $\times 4.72$  (pres.)  $\times 0.49$  cm, 100 gm, both ends recently broken off, analysed?, green patina (*Pl. 15, 268*). – State Mus. Lucknow (56. 336. 12). – Anon. 1957, 74.
- 269. Gandhauli**, Dist. Sitapur, U.P. – Axe, type Vc.  $13.0 \times 11.8$  (pres.)  $\times 12.8$  cm, 520 gm, some small casting flaws, left corner of blade broken, green patina (*Pl. 16, 269*). – State Mus. Lucknow (56. 336. 6). – Anon. 1957, 74 pl. 87D, 1.
- 270. Gandhauli**, Dist. Sitapur, U.P. – Axe, type Vc.  $13.5 \times 12.2$  (pres.)  $\times 0.98$  cm, 480 gm, concentric hammer marks, green patina worn through in places (*Pl. 16, 270*). – State Mus. Lucknow (56. 336. 7). – Anon. 1957, 74.
- 271. Gandhauli**, Dist. Sitapur, U.P. – Axe, type Vc.  $13.7 \times 10.6$  (pres.)  $\times 0.9$  cm, 580 gm, slightly planconvex in profile, analysed, left of blade broken, patchy green patina (*Pl. 16, 271*). – State Mus. Lucknow (56. 336. 8). – Anon. 1957, 74 pl. 87D, 3.
- 272. Khera Manpur**, Dist. Bulandshahr, U.P. – Axe, type IIIa.  $13.8$  (pres.)  $\times 13.6 \times 0.8$  cm, 1090 gm, front end preserved, 7 circular indentations visible (probably 8 or 9 originally) arranged on one face in a  $\Psi$  shape, Sn –, Ni 0.058%, Fe 0.065%, As 1.165%, Pb 0.0148% (Agrawal), rough surface (*Pl. 16, 272*). – State Mus.



- Lucknow (0.52). — Shastri, H. 1915, 4 pl. 4, 3; Agrawal, D.P. et al. 1974, 16.
- 273. Khera Manpur**, Dist. Bulandsharh, U.P. — Axe, type Vb.  $18.2 \times 12.8 \times 1.4$  cm, 1160 gm, surface corrosion, copper-red colour same as no. 274, right front corner bent (*Pl. 16, 273*). — State Mus. Lucknow (0.51). — Shastri, H. 1915, 4 pl. 4, 1.
- 274. Khera Manpur**, Dist. Bulandsharh, U.P. — Lance head.  $47.4 \times 6.0 \times 1.7$  cm, 930 gm, corroded, copper-red colour, edges damaged, tang twisted (*Pl. 16, 274*). — State Mus. Lucknow (0.50). — Shastri, H. 1915, 4 pl. 4, 2; Gordon, D.H. 1950, 73 fig. 1.
- 275. Kiratpur**, Dist. Bulandsharh, U.P. — Miscellaneous anthropomorph.  $11.0$  (pres.)  $\times 15.5$  (pres.)  $\times 0.4$  cm, 160.1 gms, gouged patterning, legs and one arm broken (*Pl. 16, 275*). — Aligarh Muslim University (?). — Gaur, R.C. 1973, 38; idem. 1981, 73–74 fig. 15 pl. 15 b.
- 276. Kiratpur**, Dist. Bulandsharh, U.P. — Axe, type II.  $5.7 \times 4.8 \times 0.4$  cm, 81.7 gm (Gaur) (*Pl. 16, 276*). — Aligarh Muslim University (?). — Sankalia, H.D. 1977, 169 fig. 39; Gaur, R.C. 1973, 38; idem. 1981, 73–75 pl. 15 a.
- 277. Kiratpur**, Dist. Bulandsharh, U.P. — Axe, type IV a.  $18.5 \times 6.0 \times 0.4$  cm, 242.65 gm (Gaur), dashes and a 5-point star chased onto one face (*Pl. 16, 277*). — Aligarh Muslim University (?). — Gaur, R.C. 1973, 38; idem. 1981 fig. 15 pl. 15 a.
- 278 A–H. Kiratpur**, Dist. Bulandsharh, U.P. — Miscellaneous bangles. D  $5.0$ – $7.0$  cm, A. 4.91 gm, B. 13.13 gm, C. 26.64 gm, D. 22.55 gm, E. 20.30 gm, F. 13.27 gm, G. 18.30 gm, H. 16.36 gm (*Pl. 16, 278 A–H*). — Aligarh Muslim University (?). — Gaur, R.C. 1981, 73–75 pl. 15 c.
- 279. Madnapur**, Dist. Hardoi, U.P. — Axe, type II. C.  $16.3 \times 15.3$  cm (*Pl. 16, 279*). — Archaeological Mus. Deccan College Postgraduate Inst. Pune. — Misra, V.N. 1979, 52 pl. 57 C.
- 280. Madnapur**, Dist. Hardoi, U.P. — Axe, type Va. C.  $20.7 \times 17.0$  cm (*Pl. 16, 280*). — Archaeological Mus. Deccan College Postgraduate Inst. Pune. — Misra, V.N. 1979, 52 pl. 57 A.
- 281. Mainpuri**, Dist. Mainpuri, U.P. — Axe, type III a.  $16.4 \times 11.4 \times 1.03$  cm, 1161 gm (Brown), “Cu with traces of Sn, Pb and Fe” (Anderson), corner removed for analysis (*Pl. 17, 281*). — Indian Mus. Calcutta (A 21 556 Mi 2). — Anderson, J. 1883, 404. 488; Smith, V.A. 1905, 232. 404; Brown, J. Coggin 1917, 143.
- 282. Mainpuri**, Dist. Mainpuri, U.P. — Axe, type IV a variant.  $12.0 \times 4.2 \times 0.5$  cm, 118 gm (Smith), “Traces of silver and iron. No tin.” (Smith), one corner missing (*Pl. 17, 282*). — Indian Mus. Calcutta (A 21 557 Mi 3). — Anderson, J. 1883, 404. 488; Smith, V.A. 1905, 232 pl. 2, 2; Brown, J. Coggin 1917, 144. 238.
- 283. Mainpuri**, Dist. Mainpuri, U.P. — Bangle, type II. D  $5.6 \times 6.1$  cm, wire D 0.5 cm, badly corroded (*Pl. 17, 283*). — Indian Mus. Calcutta (A 21 558 Mi 5). — Anon. 1868, 251–253; Anderson, J. 1883, 405; Smith, V.A. 1905, 232. 238 pl. 2, 4.
- 284. Mainpuri**, Dist. Mainpuri, U.P. — Bangle, type II. D  $5.5 \times 5.2$  cm, wire D 0.7 cm, badly corroded (*Pl. 17, 284*). — Indian Mus. Calcutta (A 21 559 Mi 4). — Anon. 1868, 251–253; Anderson, J. 1883, 404. 488; Smith, V.A. 1905, 232. 238 pl. 2, 4.
- 285. Mainpuri**, Dist. Mainpuri, U.P. — Bangle, type III. D  $5.4 \times 5.8$  cm, wire D. 0.34–0.7 cm, “Very minute traces of tin. Traces of iron.” (Anderson) (*Pl. 17, 285*). — Indian Mus. Calcutta (A 21 560 Mi 6). — Anon. 1868, 251–253; Anderson, J. 1883, 405. 488; Smith, V.A. 1905, 232. 238 pl. 2, 4.
- 286. Mainpuri**, Dist. Mainpuri, U.P. — Bangle, type III. D  $5.6 \times 5.7$  cm, wire D  $0.38 \times 0.48$  cm, badly corroded (*Pl. 17, 286*). — Indian Mus. Calcutta (A 21 561 Mi 7). — Anon. 1868, 251–253; Anderson, J. 1883, 405; Smith, V.A. 1905, 232 pl. 2, 4.
- 287. Mainpuri**, Dist. Mainpuri, U.P. — Bangle, type III. D  $5.4 \times 4.4$  cm, wire D 0.32 cm, corroded (*Pl. 17, 287*). — Indian Mus. Calcutta (A 21 562 Mi 8). — Anon. 1868, 251–253; Anderson, J. 1883, 405; Smith, V.A. 1905, 232 pl. 2, 4.
- 288. Mainpuri**, Dist. Mainpuri, U.P. — Bangle, type III. D  $4.7 \times 6.2$  cm, wire D 0.38–0.47 cm, badly corroded (*Pl. 17, 288*). — Indian Mus. Calcutta (A 21 563 Mi 9). — Anon. 1868, 251–253; Anderson, J. 1883, 405; Smith, V.A. 1905, 232. 238 pl. 2, 4.
- 289. Mainpuri**, Dist. Mainpuri, U.P. — Harpoon, type I.  $19.1 \times 5.0 \times 1.5$  cm, 397.0 gm (Brown), “Traces of tin and iron” (Anderson), first barb recently cut off (metal analysis) (*Pl. 17, 289*). — Indian Mus. Calcutta (A 21 555 Mi 1). — Anon. 1868, 251–253. 268; Anderson, J. 1883, 403. 488; Smith, V.A. 1905, 237 pl. 2, 1; Brown, J. Coggin 1917, 143; Piggott, S. 1944, 178–179 fig. 3, 3; Gordon, D.H. 1950, 73 fig. 1, 17; Lal, B.B. 1951, 38 A; Rau, W. 1974, 66 fig. 5, 3.
- 290. Nakrahiya**, Dist. Sitapur, U.P. — Axe, type Va.  $19.4 \times 15.9 \times 0.9$  cm, 1485 gm, smooth surface, green patina (*Pl. 17, 290*). — State Mus. Lucknow (69. 3). — Unpub.
- 291. Nakrahiya**, Dist. Sitapur, U.P. — Axe, type Va.  $18.9 \times 17.2 \times 0.9$  cm, 1415 gm, 3 groups of 3 circular indentations aligned along the butt end, cracked, surface partially scoured recently, thick green patina (*Pl. 17, 291*). — State Mus. Lucknow (69. 4). — Unpub.
- 292. Nakrahiya**, Dist. Sitapur, U.P. — Axe, type Va.  $19.5 \times 17.8 \times 1.0$  cm, 1580 gm, butt corner right bent, cutting edge chipped, green patina (*Pl. 17, 292*). — State Mus. Lucknow (69. 5). — Unpub.
- 293. Nakrahiya**, Dist. Sitapur, U.P. — Axe, type Va.

- 19.2 (pres.)  $\times$  18.5  $\times$  1.1 cm, 1930 gm, analysed, green patina (*Pl.* 17, 293). – State Mus. Lucknow (69. 6). – Unpub.
- 294. Nasirpur**, Dist. Saharanpur, U.P. – Axe, type IIIa. 11.5 (pres.)  $\times$  11.6  $\times$  1.51 cm, 760 gm, front half preserved, old break, surface corrosion, Sn–, Ni 0.0435%, Fe 0.0863%, As 0.8913%, Pb 0.0102% (Agrawal) (*Pl.* 17, 294). – Archaeological Mus. Gurukul Kangri, Hardwar (40). – Sinha, B.C. 1973, 6 unnumbered plate; Agrawal, D.P. et al. 1974, 17.
- 295. Nasirpur**, Dist. Saharanpur, U.P. – Axe, type IVb. 22.6  $\times$  11.7  $\times$  1.1 cm, 1600 gm, Sn –, Ni 0.0108%, Fe 0.0106%, As 0.2187%, Pb 0.0038% (Agrawal), Three bucrania-like S-forms hammered into one face near the butt, green patina, surface corrosion (*Pl.* 18, 295). – Archaeological Mus. Gurukul Kangri, Hardwar (41). – Sinha, B.C. 1973, 6 unnumbered plate; Agrawal, D.P. et al. 1974, 17.
- 296. Nasirpur**, Dist. Saharanpur, U.P. – Axe, Vb. 17.1  $\times$  15.5  $\times$  1.2 cm, 1180 gm, Sn –, Ni 0.0426%, Fe 0.1643%, As 1.336%, Pb 0.013% (Agrawal), slightly planoconvex, rough cast surface, green patina (*Pl.* 18, 296). – Archaeological Mus. Gurukul Kangri, Hardwar (43). – Sinha, B.C. 1973, 6 unnumbered plate; Agrawal, D.P. et al. 1974, 17.
- 297. Nasirpur**, Dist. Saharanpur, U.P. – Axe, miscellaneous. 16.8 (pres.)  $\times$  17.0 (pres.)  $\times$  1.5 cm, 1860 gm, hammer marks in a roughly concentric pattern on one face, on the reverse a slightly rough cast surface observable, preserved edge somewhat sharp (0.27 cm) widens, gradually toward one side, four edges broken, a fifth intact (*Pl.* 18, 297). – Archaeological Mus. Gurukul Kangri, Hardwar (42). – Sinha, B.C. 1973, 6 unnumbered plate.
- 298. Nasirpur**, Dist. Saharanpur, U.P. – Bar. 34.5  $\times$  3.25  $\times$  1.58 cm, 1110 gm, Sn –, Ni 0.0313%, Fe 0.0037%, As 1.8655%, Pb 0.004% (Agrawal), hammer marks visible on both faces, surface originally smooth, one corner of butt battered, dark green patina (*Pl.* 18, 298). – Archaeological Mus. Gurukul Kangri, Hardwar (46). – Sinha, B.C. 1973, 6 unnumbered plate; Agrawal, D.P. et al. 1974, 17.
- 299. Nasirpur**, Dist. Saharanpur, U.P. – Bar. 37.6  $\times$  2.21  $\times$  1.58 cm, 560 gm, Sn –, Ni 0.0499%, Fe 0.0113%, As 3.3148%, Pb 0.6744% (Agrawal), in one area edges well-preserved and squarish, otherwise surface is corroded (*Pl.* 18, 299). – Archaeological Mus. Gurukul Kangri, Hardwar (47). – Sinha, B.C. 1973, 6 unnumbered plate; Agrawal, D.P. et al. 1974, 17.
- 300. Nasirpur**, Dist. Saharanpur, U.P. – Harpoon, type IIa. 31.9  $\times$  7.3  $\times$  1.52 cm, 500 gm, Sn–, Ni 0.0438%, Fe 0.0437%, As 2.0622%, Pb 0.015% (Agrawal), barbs oval in section, surface somewhat corroded, green patina (*Pl.* 18, 300). – Archaeological Mus. Gurukul Kangri, Hardwar (45). – Sinha, B.C. 1973, 6 unnumbered plate; Agrawal, D.P. et al. 1974, 17.
- 301. Nasirpur**, Dist. Saharanpur, U.P. – Lance head. 43.0  $\times$  5.4 (pres.)  $\times$  1.07 (tang) cm, Sn –, Ni 0.091%, Fe 0.089%, As 1.0691%, Pb 0.0224% (Agrawal), concave edges, medial rib, green patina, one side badly corroded (*Pl.* 18, 301). – Archaeological Mus. Gurukul Kangri, Hardwar (39). – Sinha, B.C. 1973, 6 unnumbered plate; Agrawal, D.P. et al. 1974, 17.
- 302. Nasirpur**, Dist. Saharanpur, U.P. – Lance head. 28.3  $\times$  5.6  $\times$  0.7 cm, 170 gm, workmanship only fair, surface and edges corroded (*Pl.* 18, 302). – Archaeological Mus. Gurukul Kangri, Hardwar (44). – Sinha, B.C. 1973, 6 unnumbered plate.
- 303. Niorai**, Dist. Etawah, U.P. – Harpoon, type II. 34.3  $\times$  5.8  $\times$  2.3 cm, badly battered and broken, edges and barbs badly corroded (*Pl.* 19, 303). – National Mus. Copenhagen (OB II B2). – Anon. 1839, 12–13; Elliot, W. 1875, 692–693; Worsaae, J.A. 1883, 187–188 fig. 2.
- 304. Niorai**, Dist. Etawah, U.P. – Lance head. C. 60.6  $\times$  6.9 cm (*Pl.* 19, 304). – National Mus. Copenhagen (OB II B1). – Anon. 1839, 12–13; Smith, J.A. 1871, 298; Elliot, W. 1875, 692–693; Worsaae, J.A. 1883, 187–188 fig. 1.
- 305. Pariar**, Dist. Unao, U.P. – Axe, type IIIa. 16.82  $\times$  11.43 cm (Shastri) (*Pl.* 19, 305). – Radhakrishna Temple on the Brahmavarta Ghat. – Smith, V.A. 1905, 232; idem. 1907, 53 pl. 7; Shastri, H. 1915, 3.
- 306. Pariar**, Dist. Unao, U.P. – Axe, type Va. 20.32  $\times$  17.78 cm (Shastri) (*Pl.* 19, 306). – Radhakrishna Temple on the Brahmavarta Ghat. – Smith, V.A. 1905, 232; idem. 1907, 53 pl. 7; Shastri, H. 1915, 3.
- 307. Pariar**, Dist. Unao, U.P. – Sword fragment. 20.54 (extended pres.)  $\times$  5.08 (pres.) cm (Shastri), front end preserved, tip broken off and bent over (*Pl.* 19, 307). – Radhakrishna Temple on the Brahmavarta Ghat. – Smith, V.A. 1905, 232; idem. 1907, 53 pl. 7; Shastri, H. 1915, 3.
- 308. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IIIa. 17.7  $\times$  12.7  $\times$  0.9 cm, 1060 gm, analysed, warped by hammering, 1 side smooth and the other badly pitted, butt corner broken off (*Pl.* 19, 308). – State Mus. Lucknow (A. 221). – Smith, V.A. 1905, 234 pl. 1, 10; Marshall, J. 1922 pl. 10, 14.
- 309. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IIIa. 11.6  $\times$  8.81  $\times$  0.71 cm, 400 gm, 1 side badly corroded, nearly black (*Pl.* 19, 309). – State Mus. Lucknow (A. 223). – Smith, V.A. 1905, 234 pl. 1, 9.
- 310. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IIIb. 15.1  $\times$  12.0  $\times$  0.55 cm, 540 gm, slightly planoconvex,

- thick green patina (*Pl.* 19, 310). – State Mus. Lucknow (A. 220). – Smith, V.A. 1905, 234 pl. 1, 8.
- 311. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IIIb. 18.5 × 14.6 × 0.65 cm, 1115 gm, surface accretions and corrosion, dark green patina visible in places (*Pl.* 19, 311). – State Mus. Lucknow (A. 222). – Smith, V.A. 1905, 234 pl. 1, 7.
- 312. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IIIb. 19.8 × 13.5 × 0.6 cm, 950 gm, heavily encrusted with dirt and corrosion products (*Pl.* 19, 312). – State Mus. Lucknow (A. 224). – Smith, V.A. 1905, 234 pl. 1, 14.
- 313. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IIIb. 17.4 × 12.5 × 0.51 cm, 680 gm, very dark green patina (*Pl.* 20, 313). – Formerly State Mus. Lucknow, now Patna Mus. (3816). – Smith, V.A. 1905, 234 pl. 1, 11.
- 314. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IIIb. C. 20.4 × 12.6 cm (*Pl.* 20, 314). – State Mus. Lucknow (not located 1983). – Smith, V.A. 1905, 234 pl. 1, 13.
- 315. Provenance unknown** (Rajpur Parsu), Dist. Bijnor, U.P. – Axe, type IIIb. 16.9 × 12.3 × 0.63 cm, same shape and patina as the axes from this site (*Pl.* 20, 315). – Indian Mus. Calcutta (A 21515, NA 3330, NS 3334). – Marshall, J. 1922 pl. 10, 15.
- 316. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe, type IVa. 20.9 × 5.9 × 0.6 cm, 390 gm, slightly biconvex in section, cutting edge chipped, green patina (*Pl.* 20, 316). – State Mus. Lucknow (A. 218). – Smith, V.A. 1905, 234 pl. 1, 12.
- 317. Rajpur Parsu**, Dist. Bijnor, U.P. – Axe-ingot, miscellaneous. 13.9 × 4.07 × 0.8 cm, 275 gm, surface rough, hammered (*Pl.* 20, 317). – State Mus. Lucknow (A. 215). – Smith, V.A. 1905, 234 pl. 1, 15; Marshall, J. 1922 pl. 10, 13.
- 318. Rajpur Parsu**, Dist. Bijnor, U.P. – Bar. 30.7 × 1.72 × 0.98 cm, 350 gm, surface pitting on both ends (*Pl.* 20, 318). – State Mus. Lucknow (A. 217). – Smith, V.A. 1905, 234 pl. 1, 16; Marshall, J. 1922 pl. 10, 11.
- 319. Rajpur Parsu**, Dist. Bijnor, U.P. – Harpoon, type II. 30.1 × 6.8 × 1.92 cm, edge and barbs on the left side slightly corroded (*Pl.* 20, 319). – Formerly State Mus. Lucknow (Smith), now Indian Mus. Calcutta (A 21400). – Smith, V.A. 1905, 234 pl. 1, 2; Rau, W. 1974, 65 fig. 3, 2.
- 320. Rajpur Parsu**, Dist. Bijnor, U.P. – Harpoon, type II. 31.7 × 6.46 × 1.95 cm (*Pl.* 20, 320). – Formerly State Mus. Lucknow (Smith), now Indian Mus. Calcutta (A 21512 NS 3330). – Smith, V.A. 1905, 234 pl. 1, 5; Gordon, D.H. 1950, 73 fig. 1, 12; Rau, W. 1974, 65 fig. 3, 5.
- 321. Rajpur Parsu**, Dist. Bijnor, U.P. – Harpoon, type II. 32.0 × 6.2 × 2.07 cm, battered and corroded, one lug and one barb broken off (*Pl.* 20, 321). – Formerly State Mus. Lucknow (Smith), now Indian Mus. Calcutta (A 21513 NS 3332). – Smith, V.A. 1905, 234 pl. 1, 3; Rau, W. 1974, 65 fig. 3.
- 322. Rajpur Parsu**, Dist. Bijnor, U.P. – Harpoon, type II. 35.3 × 7.0 × 2.8 cm, 880 gm, two unusual rings between the two lugs and last barbs, blade chipped, one side encrusted with dirt, dark green patina (*Pl.* 20, 322). – State Mus. Lucknow (A. 229). – Smith, V.A. 1905, 231, 234 pl. 1, 6; Marshall, J. 1922 pl. 10, 16; von Heine-Geldern, R. 1936, 102 fig. 41; Rau, W. 1974, 65 fig. 3, 6.
- 323. Rajpur Parsu**, Dist. Bijnor, U.P. – Harpoon, type II. 37.2 × 6.8 × 2.5 cm, 945 gm, very regular in form, analysed, green patina (*Pl.* 21, 323). – State Mus. Lucknow (A. 227). – Smith, V.A. 1905, 234 pl. 1, 4; Piggott, S. 1944, 178–180 fig. 3, 5; Rau, W. 1974, 66 fig. 5 no. B 10, foldout 2.
- 324. Rajpur Parsu**, Dist. Bijnor, U.P. – Harpoon, type II. 35.4, 7.8 × 2.0 cm, 820 gm, workmanship only fair, edges battered, dark green patina (*Pl.* 21, 324). – Formerly State Mus. Lucknow (Smith), now Patna Mus. (3817). – Smith, V.A. 1905, 234 pl. 1, 1; Rau, W. 1974, 65 fig. 3, 1.
- 325. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 23.5 × 12.5 × 1.3 cm, c. 2200 gm, slightly planoconvex, faint hammer marks right, casting bubbles visible, mottled light green patina powdery in places (*Pl.* 21, 325). – State Mus. Lucknow (81.57). – Agrawal, D.P. et al. 1974, 17–18.
- 326. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 24.3 × 12.6 × 1.8 cm, some ovoid hammer marks, green patina (*Pl.* 21, 326). – State Mus. Lucknow (81.56). – Unpub.
- 327. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 23.7 × 12.3 cm, 1605 gm, pin hole bubbles (*Pl.* 21, 327). – State Mus. Lucknow (81.58). – Unpub.
- 328. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 22.1 × 11.8 × 1.3 cm, 2070 gm, traces of hammering (*Pl.* 21, 328). – State Mus. Lucknow (81.59). – Unpub.
- 329. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 19.8 × 10.9 × 1.3 cm, c. 2300 gm, hammer marks visible (*Pl.* 21, 329). – State Mus. Lucknow (81.60). – Unpub.
- 330. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 19.2 × 10.3 × 1.56 cm, 1760 gm, roughly formed, copper-red colour (*Pl.* 21, 330). – State Mus. Lucknow (81.61). – Unpub.
- 331. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 19.2 × 10.3 × 1.8 cm, 1805 gm, blackened (by oxidation?), copper-colour shows through in places. (*Pl.* 21, 331). – State Mus. Lucknow (81.62). – Unpub.
- 332. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type

- V. 18.0 × 10.0 × 2.2 cm, 1780 gm (*Pl.* 21, 332). – State Mus. Lucknow (81.63). – Unpub.
- 333. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 18.1 × 9.9 × 2.2 cm, 1710 gm, many casting bubbles, in profile reverse sags (*Pl.* 22, 333). – State Mus. Lucknow (81.64). – Unpub.
- 334. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 19.3 × 10.4 × 1.7 cm, 1790 gm (*Pl.* 22, 334). – State Mus. Lucknow (81.65). – Unpub.
- 335. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 18.3 × 10.1 × 1.6 cm, 1710 gm, deep casting flaws (*Pl.* 22, 335). – State Mus. Lucknow (81.66). – Unpub.
- 336. Resgavaon**, Dist. Mathura, U.P. – Axe-ingot, type V. 18.1 × 9.9 × 1.7 cm, 1730 gm (*Pl.* 22, 336). – State Mus. Lucknow (81.67). – Unpub.
- 337. Saipai**, Dist. Etawah, U.P. – Anthropomorph, type I. 24.1 × 27.04 × 0.76 cm, 1270 gm, both sides show a chevron patterning, left arm broken off (*Pl.* 22, 337). – Purana Qila Coll. Delhi (74.12/4). – Lal, B.B. 1972, 285 fig. 2d pl. 43d.
- 338. Saipai**, Dist. Etawah, U.P. Excavated. Bl. Qd. IV, 45 cm beneath surface, associated with red slipped ware and OCP. – Harpoon, type II. 30.2 × 5.8 × 1.87 cm, 660 gm, surface accretions, spalling at the butt (*Pl.* 22, 338). – Purana Qila Coll. Delhi (74.12/3). – Lal, B.B. 1972, 46–49 pl. 2B; idem. 1972a, 283–285 fig. 2c pl. 42b, 43c; idem. 1974, 38.
- 339. Saipai**, Dist. Etawah, U.P. – Lance head. 69.7 × 7.85 × 1.42 cm, 1480 gm, blade chipped, five scratches run the length, surface originally highly polished (*Pl.* 22, 339). – Purana Qila Coll. Delhi (74.12/1). – Wahal, L.M. 1972, 12–13; Lal, B.B. 1972a, 285 fig. 2a pl. 43a; idem. 1974, 38.
- 340. Saipai**, Dist. Etawah, U.P. Excavated. – Lance head. 68.0 × 7.26 × 1.22 cm, 1390 gm, sharp edges, smooth surface (*Pl.* 22, 340). – Purana Qila Coll. Delhi (74.12/2). – Lal, B.B. 1972a, 285 fig. 2b pl. 43b.
- 341. Sarthauli**, Dist. Shahjahanpur, U.P. – Axe, miscellaneous. 17.5 × 22.1 (pres.) × 0.91 cm, 1010 gm, dull cutting edge, prominent ovoid hammer marks form roughly concentric ovals, dark green patina (*Pl.* 23, 341). – State Mus. Lucknow (G.5). – Lal, B.B. 1951, 29. 38A fig. 4, 6 pl. 7B, 1; idem. 1953, 92 fig. 5, 8; Gordon, D.H. 1958, 136 fig. 17, 8; Müller-Karpe, H. 1980 pl. 566A, 6.
- 342. Sarthauli**, Dist. Shahjahanpur, U.P. – Harpoon, type I. 28.6 × 6.1 × 1.4 cm, 520 gm, one barb broken, concave edges (*Pl.* 23, 342). – State Mus. Lucknow (G.4). – Lal, B.B. 1951, 28. 38A fig. 4, 8 pl. 7B, 2; idem. 1953, 92 fig. 5, 4; Gordon, D.H. 1958, 136 fig. 17, 4; Rau, W. 1974, 64 fig. 2, 2; Müller-Karpe, H. 1980 pl. 566A, 3.
- 343. Sarthauli**, Dist. Shahjahanpur, U.P. – Lance head. 31.2 × 6.3 × 0.71 cm (tang) 440 gm, concave edges, dark green patina (*Pl.* 23, 343). – State Mus. Lucknow (G.6). – Lal, B.B. 1951, 28. 38A fig. 4, 5 pl. 8, 1; Müller-Karpe, H. 1980 pl. 566A, 4.
- 344. Sarthauli**, Dist. Shahjahanpur, U.P. – Lance head. 39.5 × 5.5 × 1.6 cm, 700 gm, analysed, dark green patina, one edge somewhat corroded (*Pl.* 24, 344). – State Mus. Lucknow (G.7). – Lal, B.B. 1951, 28. 38A fig. 4, 7 pl. 8, 5; idem. 1953, 92 fig. 5, 7; Gordon, D.H. 1958, 136 fig. 17, 7; Müller-Karpe, H. 1980 pl. 566A, 5.
- 345. Sarthauli**, Dist. Shahjahanpur, U.P. – Lance head. 40.1 × 7.6 × 1.19 cm, 800 gm, concave edges, rough workmanship, dark green patina, one edge battered, analysed (*Pl.* 24, 345). – State Mus. Lucknow (G.8). – Lal, B.B. 1951, 28. 38A pl. 8, 2.
- 346. Sarthauli**, Dist. Shahjahanpur, U.P. – Lance head. 44.4 × 7.2 × 1.72 (blade) cm, 1150 gm, concave edges, barb broken off, dark green patina (*Pl.* 24, 346). – State Mus. Lucknow (G.9). – Lal, B.B. 1951, 28. 38A fig. 4, 3 pl. 8, 4; Müller-Karpe, H. 1980 pl. 566A, 2.
- 347. Sarthauli**, Dist. Shahjahanpur, U.P. – Lance head. 51.6 × 6.8 (pres.) × 1.25 (pres.) cm, 1095 gm, analysed, traces of burnishing run lengthwise, dark green patina, one edge corroded away (*Pl.* 25, 347). – State Mus. Lucknow (G.10). – Lal, B.B. 1951, 28. 38A fig. 4, 1 pl. 8, 3; Müller-Karpe, H. 1980 pl. 566A, 1.
- 348. Sheorajpur**, Dist. Kanpur, U.P. – Anthropomorph, type II. 47.9 × 37.2 × 1.81 cm, c. 4000 gm, both sides patterned, fish chased on one side (*Pl.* 23, 348). – State Mus. Lucknow (O. 37a). – Lal, B.B. 1951, 29. 38A pl. 10A; idem. 1953, 92 fig. 5, 1; Müller-Karpe, H. 1980 pl. 565A, 2.
- 349. Sheorajpur**, Dist. Kanpur, U.P. – Anthropomorph, type II. 47.7 × 39.0 × 2.1 cm, c. 4000 gm, both sides patterned (*Pl.* 24, 349). – State Mus. Lucknow (O. 37b). – Lal, B.B. 1951, 29. 38A fig. 4, 2 pl. 9, 2; idem. 1953, 92 fig. 5, 1; Gordon, D.H. 1958, 136 fig. 17, 1; Müller-Karpe, H. 1980 pl. 565A, 3.
- 350. Sheorajpur**, Dist. Kanpur, U.P. – Anthropomorph, type II. 44.2 × 35.0 (pres.) × 2.65 cm, c. 4000 gm, both sides patterned, upper edge of 'head' also patterned, one arm broken off, green patina (*Pl.* 25, 350). – State Mus. Lucknow (O. 37c). – Lal, B.B. 1951, 29. 38A pl. 9, 1; Müller-Karpe, H. 1980 pl. 565A, 1.

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351. **Aguibani**, Dist. Midnapur, W.B. – Axe-ingot, type Ia. 7.6 (pres.)  $\times$  17.1  $\times$  1.1 cm, front end preserved, modern break (*Pl.* 25, 351). – State Arch. Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61.
352. **Aguibani**, Dist. Midnapur, W.B. – Axe-ingot, type Ib variant. 18.8 (pres.)  $\times$  16.1  $\times$  1.2 cm, c. 2200 gm, slightly planoconvex, butt end broken off recently (*Pl.* 25, 352). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61; Anon. 1980a, 82 pl. 63 B.
353. **Aguibani**, Dist. Midnapur, W.B. – Axe-ingot, type Ib variant. 12.3  $\times$  9.9  $\times$  1.0 cm, 580 gm, slightly planoconvex, broken through the middle recently (*Pl.* 25, 353). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61; Anon. 1980a, 82 pl. 63 B.
354. **Aguibani**, Dist. Midnapur, W.B. – Bangle, type II. D 9.4 cm, wire D 0.8 cm (*Pl.* 26, 354). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61; Anon. 1980a, 82 pl. 63 B.
355. **Aguibani**, Dist. Midnapur, W.B. – Bangle, type II. D 6.8 cm, wire D 0.7 cm (*Pl.* 26, 355). – State Archaeological Gallery Calcutta (no no.). – Anon. 1980a, 82 pl. 63 B.
- 356 a–i. **Aguibani**, Dist. Midnapur, W.B. – 9 Bangles, mixed (*Pl.* 26, 356). – State Archaeological Gallery Calcutta (no no.). – Anon. 1980a, 82.
357. **Aguibani**, Dist. Midnapur, W.B. – Miscellaneous disc. 8.6 (pres.)  $\times$  9.5 (pres.)  $\times$  1.2 cm, 500 gm, quarter of a broken planoconvex disc, grey-green rough surface (*Pl.* 26, 357). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61.
358. **Aguibani**, Dist. Midnapur, W.B. – Miscellaneous disc. 8.5  $\times$  8.7  $\times$  1.5 cm, 380 gm, grey-green rough surface (*Pl.* 26, 358). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61.
359. **Aguibani**, Dist. Midnapur, W.B. – Miscellaneous disc. 11.4  $\times$  10.3  $\times$  2.1 cm, 850 gm, grey-green rough surface (*Pl.* 26, 359). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61.
360. **Aguibani**, Dist. Midnapur, W.B. – Miscellaneous disc. 9.0  $\times$  7.5  $\times$  1.5 cm, 360 gm, rough surface, irregularly shaped, grey-green rough surface (*Pl.* 26, 360). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60–61.
361. **Andhari**, Dist. Singhbhum, Bi. – Axe-ingot, type Ia. 23.0  $\times$  19.5  $\times$  1.8 cm, indented casting seams visible near the butt end (*Pl.* 26, 361). – Patna Mus. (no no.). – Lal, B.B. 1971, 84.
362. **Andhari**, Dist. Singhbhum, Bi. – Axe-ingot, type Ia. 25.2  $\times$  20.8  $\times$  1.6 cm, innumerable tiny casting flaws and pin hole bubbles, dark green patina (*Pl.* 26, 362). – Patna Mus. (no no.). – Lal, B.B. 1971, 84.
363. **Andhari**, Dist. Singhbhum, Bi. – Axe-ingot, type Ia. 29.5  $\times$  2.08  $\times$  1.6 cm, innumerable tiny casting flaws and pin hole bubbles (*Pl.* 26, 363). – Patna Mus. (no no.). – Lal, B.B. 1971, 84.
364. **Andhari**, Dist. Singhbhum, Bi. – Axe-ingot, type Ia. 25.6  $\times$  21.0  $\times$  1.5 cm (*Pl.* 27, 364). – Patna Mus. (no no.). – Lal, B.B. 1971, 84.
365. **Andhari**, Dist. Singhbhum, Bi. – Axe-ingot, type Ia. 23.6  $\times$  21.8  $\times$  c. 1.6 cm, c. 4000 gm, grainy surface (*Pl.* 27, 365). – Patna Mus. (no no.). – Lal, B.B. 1971, 84.
366. **Andhari**, Dist. Singhbhum, Bi. – Axe-ingot, type Ib variant. 23.6  $\times$  21.8  $\times$  c. 1.6 cm, c. 4000 gm, indented casting seams on sides near butt end, patterned by hammer marks on both sides, grainy surface (*Pl.* 27, 366). – Patna Mus. (no no.). – Lal, B.B. 1971, 84.
367. Near the **Baragunda mine**, Dist. Hazaribagh, Bi. – Axe-ingot, type III. 16.51  $\times$  14.54 cm (*Pl.* 27, 367). – Gov't. Mus. Madras (4106). – Foote, R. 1916, 164. 208 pl. 19.
368. Near the **Baragunda mine**, Dist. Hazaribagh, Bi. – Bangle, type II. D 10.66 cm (*Pl.* 27, 368). – Gov't. Mus. Madras (4107). – Foote, R. 1916, 164. 208 pl. 19.
369. **Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 14.0  $\times$  10.4  $\times$  1.5 cm, innumerable tiny bubbles visible in the reverse surface (*Pl.* 27, 369). – Formerly E.A. Gait Coll., now Patna Mus. (2696). – Unpub.
370. **Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 15.6  $\times$  11.8  $\times$  1.2 cm, 875 gm (*Pl.* 27, 370). – Formerly E.A. Gait Coll., now Patna Mus. (2697). – Unpub.
371. **Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 14.5  $\times$  10.4  $\times$  1.1 cm, 820 gm numerous tiny bubbles (*Pl.* 27, 371). – Formerly E.A. Gait Coll., now Patna Mus. (2698). – Unpub.
372. **Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 15.0  $\times$  11.2  $\times$  1.2 cm (*Pl.* 27, 372). – Formerly E.A. Gait Coll., then Patna Mus. (2699), now University Mus. for Archaeology and Anthropology, Cambridge. – Unpub.
373. **Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 14.0  $\times$  11.2  $\times$  1.2 cm, 1690 gm (*Pl.* 27, 373). – Formerly E.A. Gait Coll., now Patna Mus. (2700). – Unpub.
374. **Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 14.0  $\times$  10.6  $\times$  1.36 cm, 845 gm, many casting bubbles, crudely formed, indentation left of centre, green patina (*Pl.* 28, 374). – Formerly E.A. Gait Coll., then Patna Mus. (2701), now State Mus. Lucknow (G.23/3). – Unpub.
375. **Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III.

- 14.6 × 10.9 × 1.1 cm, bluish efflorescence (*Pl.* 28, 375). – Formerly E.A. Gait Coll., then Patna Mus. (2702), now University Mus. of Archaeology and Anthropology, Cambridge. – Unpub.
- 376. Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 13.7 × 10.4 × 1.1 cm, 700 gm, numerous bubbles visible in the reverse surface (*Pl.* 28, 376). – Formerly E.A. Gait Coll., now Patna Mus. (2703). – Unpub.
- 377. Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 15.2 × 11.9 × 1.3 cm (*Pl.* 28, 377). – Formerly E.A. Gait Coll., then Patna Mus. (2704), now University Mus. for Archaeology and Anthropology, Cambridge. – Unpub.
- 378. Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 15.0 × 10.9 × 1.4 cm (*Pl.* 28, 378). – Formerly E.A. Gait Coll., then Patna Mus. (2705), now University Mus. for Archaeology and Anthropology, Cambridge. – Unpub.
- 379. Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 15.2 × 11.5 × 1.3 cm, 985 gm, numerous casting bubbles in the reverse surface (*Pl.* 28, 379). – Formerly E.A. Gait Coll., now Patna Mus. (2706). – Unpub.
- 380. Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 14.8 × 10.9 × 1.2 cm, 710 gm, casting bubbles visible particularly on the reverse, very roughly formed, thick green patina (*Pl.* 28, 380). – Formerly E.A. Gait Coll., then Patna Mus. (2707), now State Mus. Lucknow (G.25/4). – Unpub.
- 381. Bartola**, Dist. Ranchi, Bi. – Axe-ingot, type III. 17.3 × 12.9 (pres.) × 1.4 cm, 920 gm, metal extremely porous and fragile, in profile bent, front left corner broken (*Pl.* 28, 381). – Formerly E.A. Gait Coll., now Patna Mus. (2708). – Unpub.
- 382. Bhagra Pir**, Dist. Mayurbanj, Or. – Double axe, type I. 46.5 × 40.1 (pres.) × 0.38 cm, c. 2300 gm, right side damaged, burr on left edge of hollow, on right edge thereof corroded, warped from pounding on reverse side, lead edge sharp, trailing edge dull (*Pl.* 29, 382). – Patna Mus. (237). – Brown, J. Coggin, 1916, 386–387 fig. 1; Gupta, S.P. 1965, 4 pl. 2.
- 383. Bhagra Pir**, Dist. Mayurbanj, Or. – Double axe, type I. 25.6 × 21.8 × 0.6 cm, 1205 gm, surface slightly pitted and uneven, very dark green patina (*Pl.* 29, 383). – Patna Mus. (238). – Brown, J. Coggin, 1916, 386–387 fig. 3; Lal, B.B. 1953, 92 fig. 5, 11; Gordon, D.H. 1958, 136 fig. 17, 11; Gupta, S.P. 1965, 4 pl. 2; Müller-Karpe, H. 1980 pl. 562 F.
- 384. Bhagra Pir**, Dist. Mayurbanj, Or. – Double axe, type I. 27.0 × 17.9 (pres.) × 0.2 cm, 280 gm, cutting edges sharp, battered (*Pl.* 29, 384). – Formerly Patna Mus. (239), now State Mus. Lucknow (G.25). – Brown, J. Coggin 1916, 386–387 fig. 2; Lal, B.B. 1951, 38 A; Gupta, S.P. 1965, 4 fig. 2.
- 385. Bhaktabundh**, Dist. Bankura, W.B. – Axe-ingot, type Ib. 24.8 × 23.1 × c. 1.7 cm, 4250 gm, relatively roughly formed, thick light green patina with a copper-coloured patch on obverse (*Pl.* 28, 385). – State Archaeological Gallery Calcutta (1). – Ray, A./A.K. Datta 1978, 61–62 pl. 1, 1; Anon. 1980a, 82 pl. 63 A.
- 386. Bhaktabundh**, Dist. Bankura, W.B. – Axe-ingot, type II. 19.0 × 15.1 × 2.1 cm, 2485 gm (Chakrabarti), obverse surface very rough, thick light green patina (*Pl.* 28, 386). – State Arch. Gallery Calcutta. – Ray, A./A.K. Datta 1978, 60–61; Anon. 1980a, 82 pl. 63 A.
- 387. Bhaktabundh**, Dist. Bankura, W.B. – Bar celt-ingot. 13.3 (pres.) × 3.3 (pres.) × 1.27 cm, 360 gm, irregularly formed, worn, butt end preserved, old break, thick light green patina worn through in places, battered (*Pl.* 30, 387). – State Archaeological Gallery Calcutta (no no.). – Ray, A./A.K. Datta 1978, 60 pl. 2, 2.
- 388. Borodanga**, Dist. Singhbhum, Bi. – Axe-ingot, type Ib. 27.1 × 24.0 × 1.3 cm, crisply wrought edges, numerous hammer marks visible on obverse, analysed (*Pl.* 30, 388). – Patna Mus. (11 257). – The Indian Nation 18 Oct. 1966, 3; Anon. 1875 a, 82.
- 389. Borodanga**, Dist. Singhbhum, Bi. – Axe-ingot, type Ib. 26.6 × 23.6 cm, overall lightly hammered on both faces, analysed, dark green patina (*Pl.* 30, 389). – Patna Mus. (11 258). – The Indian Nation 18 Oct. 1966, 3; Anon. 1975 a, 82.
- 390. Borodanga**, Dist. Singhbhum, Bi. – Axe-ingot, type Ib. 25.9 × 23.7 × 1.2 cm, analysed (*Pl.* 30, 390). – Patna Mus. (11 259). – The Indian Nation 18 Oct. 1966, 3; Anon. 1975 a, 82.
- 391. Chandsar**, Dist. Santal Pargana, Bi. – Axe-ingot, type Ib. 25.5 × 23.6 cm, both surfaces smoothly finished, thick light green patina, butt corner left recently broken (*Pl.* 30, 391). – Patna Mus. (10 556). – Unpub.
- 392. Chandsar**, Dist. Santal Pargana, Bi. – Axe-ingot, type Ib. 25.1 × 24.0 × 1.2 cm, metal recently roughly gouged, thick light green patina (*Pl.* 31, 392). – Patna Mus. (10 557). – Unpub.
- 393. Dargama**, Dist. Ranchi, Bi. – Axe-ingot, type III. 17.2 × 13.7 (pres.) × 1.9 cm, 1415 gm (*Pl.* 31, 393). – Formerly S.C. Roy Coll., now Patna Mus. (258). – Roy, S.C. 1915, 242 pl. 3 A; idem. 1920, 417 pl. 21; Gordon, D.H. 1950, 73 fig. 1, 22; Lal, B.B. 1951, 38 A.
- 394. Dunria**, Dist. Dhenkanal, Or. – Axe-ingot, type I. 19.0 × 16.1 × 1.8 cm, 2200 gm +, rough surface, numerous hammered dents visible (*Pl.* 31, 394). – Presented by Babu S.N. Misra, to the Patna Mus. (244). – Unpub.
- 395. Dunria**, Dist. Dhenkanal, Or. – Axe-ingot, type I. 22.1 × 17.0 × 1.3 cm, c. 2600 gm, lead edge dull (*Pl.* 31, 395). – Present by Babu S.N. Misra, Patna Mus. (245). – Unpub.



- 396. Dunria**, Dist. Dhenkanal, Or. – Axe-ingot, type I.  $20.2 \times 17.8 \times 1.2$  cm, c. 2500 gm, granular surface, dark green patina, front edge dull (*Pl. 31, 396*). – Presented by Babu S.N. Misra to the Patna Mus. (old 246), now State Mus. Lucknow (G.23/2). – Lal, B.B. 1951, 29 fig. 3, 8 pl. 10B; idem. 1953, 92 fig. 5, 10; Gordon, D.H. 1958, 136 fig. 17, 10.
- 397. Hami**, Dist. Palamau, Bi. – Axe-ingot, type III.  $16.6 \times 13.8 \times 1.5$  cm, 1470 gm (*Pl. 31, 397*). – Patna Mus. (261). – Unpub.
- 398. Hami**, Dist. Palamau, Bi. – Axe-ingot, type III.  $17.0 \times 13.4 \times 1.1$  cm, 1280 gm, dark grey surface (*Pl. 31, 398*). – Patna Mus. (262). – Unpub.
- 399. Hami**, Dist. Palamau, Bi. – Axe-ingot, type III.  $18.0 \times 14.7 \times 1.4$  cm, 1650 gm, 'dimple' in the middle of the obverse, roughly hammered, well-preserved (*Pl. 31, 399*). – Patna Mus. (263). – Unpub.
- 400. Hami**, Dist. Palamau, Bi. – Axe-ingot, type III.  $17.2 \times 13.5 \times 1.3$  cm, 1450 gm (*Pl. 32, 400*). – Patna Mus. (264). – Unpub.
- 401. Hami**, Dist. Palamau, Bi. – Axe-ingot, type III.  $17.5 \times 14.2 \times 1.4$  cm, 1585 gm, deeply corroded in places (*Pl. 32, 401*). – Patna Mus. (265). – Unpub.
- 402. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $40.6 \times 7.3 \times 2.2$  cm, 2200 gm, (modern?) notch cut into upper surface, surface spalling (*Pl. 32, 402*). – Formerly Patna Mus., now State Mus. Lucknow (G.24/2). – Unpub.
- 403. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $47.0 \times 4.5 \times 2.6$  cm, c. 2300 gm, notch cut into upper surface, some hammer marks visible (*Pl. 32, 403*). – Previously Patna Mus. (217), now State Mus. Lucknow (G.24/1). – Unpub.
- 404. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $43.4 \times 6.0 \times 2.15$  cm, 2200 gm, analysed (*Pl. 32, 404*). – Patna Mus. (218). – Unpub.
- 405. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $46.5 \times 5.8 \times 2.7$  cm (*Pl. 32, 405*). – Patna Mus. (220). – Unpub.
- 406. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $43.4$  (pres.)  $\times 5.5$  (pres.)  $\times 2.15$  cm, 1990 gm, front edge and butt end broken off (*Pl. 32, 406*). – Patna Mus. (221). – Unpub.
- 407. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $51.2 \times 5.5$  (pres.)  $\times 1.6$  cm, left front edge recently broken (*Pl. 32, 407*). – Patna Mus. (222). – Unpub.
- 408. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $34.9$  (pres.)  $\times 4.6$  (pres.)  $\times 2.2$  cm, 1745 gm, front end broken off recently (*Pl. 33, 408*). – Patna Mus. (223). – Unpub.
- 409. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $51.5 \times 6.4 \times 2.5$  cm, c. 3100 gm, notch cut perpendicular to the length, hammer marks on obverse (*Pl. 32, 409*). – Patna Mus. (224). – Unpub.
- 410. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $41.0 \times 5.8 \times 1.1$  cm, full of casting flaws, texture of the metal suggests low temperature smelting (*Pl. 33, 410*). – Patna Mus. (225). – Unpub.
- 411. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $39.3$  (pres.)  $\times 5.6 \times 2.2$  cm, butt end broken off recently (*Pl. 33, 411*). – Patna Mus. (226). – Unpub.
- 412. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $43.9 \times 5.9 \times 2.5$  cm, 2060 gm, notch filed onto obverse perpendicular to the length (*Pl. 33, 412*). – Patna Mus. (227). – Unpub.
- 413. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $61.4 \times 5.6 \times 2.4$  cm (*Pl. 33, 413*). – Patna Mus. (231). – Unpub.
- 414. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $10.6$  (pres.)  $\times 6.6 \times 2.6$  cm, front end preserved (*Pl. 33, 414*). – Patna Mus. (232). – Unpub.
- 415. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $41.9 \times 7.4 \times 1.9$  cm, 2190 gm, notch cut on obverse perpendicular to length, surface badly corroded near lead edge (*Pl. 33, 415*). – Patna Mus. (233). – Unpub.
- 416. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $38.5 \times 6.6 \times 2.1$  cm, surface corroded (*Pl. 34, 416*). – Previously Patna Mus. (234), now University Mus. of Arch. and Anthr., Cambridge (1919.58.1). – Unpub.
- 417. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $39.5 \times 6.2 \times 2.3$  cm, well-preserved (*Pl. 34, 417*). – Previously Patna Mus., now University Mus. of Archaeology and Anthropology, Cambridge (1919.58.2). – Unpub.
- 418. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $40.7 \times 6.1 \times 2.1$  cm, (modern?) cut into obverse surface perpendicular to length (*Pl. 34, 418*). – Previously Patna Mus., now University Mus. of Archaeology and Anthropology, Cambridge (1919.58.3). – Unpub.
- 419. Hami**, Dist. Palamau, Bi. – Bar celt-ingot.  $58.8 \times 4.7 \times 1.8$  cm (*Pl. 34, 419*). – Previously Patna Mus., now University Mus. of Archaeology and Anthropology, Cambridge (1919.58.4). – Unpub.
- 420. Near Karharbari**, Dist. Hazaribagh, Bi. – Axe-ingot, type I.  $17.7 \times 14.9 \times 2.0$  cm, 1715 gm (Brown), "No tin, traces of iron" (Brown), rough surface, badly damaged, large metal samples removed (*Pl. 34, 420*). – Indian Mus. Calcutta (A 21551 Pa 1). – Anon. 1871, 231–234; Anderson, J. 1883, 393, 488; Smith, V.A. 1905, 232, 235; Brown, J. Coggin, 1917, 141.
- 421. Near Karharbari**, Dist. Hazaribagh, Bi. – Axe-ingot, type II.  $15.4 \times 13.8 \times 1.3$  cm, 1450 gm (Brown), "No tin. Traces of iron" (Brown), one corner recently removed (*Pl. 34, 421*). – Indian Mus. Calcutta (A 21552 Pa 2). – Anon. 1871, 231–234; Anderson, J. 1883, 394, 488; Smith, V.A. 1905, 232, 235; Brown, J. Coggin, 1917, 142.

422. Near **Karharbari**, Dist. Hazaribagh, Bi. – Axe-ingot, type II.  $15.8 \times 12.3 \times 1.9$  cm, 1509 (Brown), very roughly cast (*Pl.* 34, 422). – Indian Mus. Calcutta (A 21553 Pa 3). – Anon. 1871, 231–234; Smith, V.A. 1905, 232, 235; Brown, J. Coggin, 1917, 142.
423. Near **Karharbari**, Dist. Hazaribagh, Bi. – Axe-ingot, type II.  $13.0 \times 10.5 \times 1.6$  cm, 1158 gm (Brown), deep casting flaws, very roughly fashioned (*Pl.* 35, 423). – Indian Mus. Calcutta (A 21554 Pa 4). – Anon. 1871, 241–243; Smith, V.A. 1905, 232, 235; Brown, J. Coggin, 1917, 142.
424. **Kulgara**, Dist. Purulia, W.B. – Axe-ingot, type I.  $20.1 \times 15.5 \times 1.7$  cm, 2500 gm (Chakrabarti), thick light green patina (*Pl.* 35, 424). – State Archaeological Gallery Calcutta (M 202). – Chakrabarti, D.K. 1975, 294.
425. **Kulgara**, Dist. Purulia, W.B. – Axe-ingot, type I.  $20.3 \times 16.5 \times 1.4$  cm, 2500 gm (Chakrabarti), deep recent scratching, thick light green patina (*Pl.* 35, 425). – State Archaeological Gallery Calcutta (M 203). – Chakrabarti, D.K. 1975, 294; idem. 1975a, 51 pl. 65 A.
426. **Kulgara**, Dist. Purulia, W.B. – Axe-ingot, type Ib.  $21.1 \times 18.5 \times 1.3$  cm, 2500 gm (Chakrabarti), thick light green patina (*Pl.* 35, 426). – State Archaeological Gallery Calcutta (M 201). – Chakrabarti, D.K. 1975, 294.
427. **Kulgara**, Dist. Purulia, W.B. – Bar celt-ingot variant.  $45.0 \times 5.0 \times 2.72$  cm, 2700 gm (Chakrabarti), on obverse smoothing marks run lengthwise, on reverse casting skin, no traces of wear, thick shiny light green patina (*Pl.* 35, 427). – State Archaeological Gallery Calcutta (M 204). – Chakrabarti, D.K. 1975, 294; idem. 1975a, 51 pl. 65 B.
428. **Mahisadal**, Dist. Birbhum, W.B. Period I. – Axe, type IV a. c.  $18.8 \times 11.3$  cm (*Pl.* 35, 428). – Circle Office ASI Calcutta. – Das, R.P. 1967, 60 pl. 41 B; Mukherjee, S.C. 1967, 39.
429. **Pandu Rajar Dhibi**, Dist. Burdwan, W.B. Period II, layers 5–6, Chalcolithic. – Miscellaneous bangle. D c. 10.0 cm (*Pl.* 35, 429). – State Archaeological Gallery Calcutta (not located 1982–83). – Mukherjee, S.C. 1967, 40 pl. oppos. p. 40 no. 1.
430. **Pandu Rajar Dhibi**, Dist. Burdwan, W.B. Period II, layers 5–6, Chalcolithic. – Miscellaneous bangle. D c. 7.9 cm (*Pl.* 35, 430). – State Archaeological Gallery Calcutta (not located 1982–83). – Mukherjee, S.C. 1967, 40 pl. oppos. p. 40 no. 2.
431. **Pandu Rajar Dhibi**, Dist. Burdwan, W.B. Period II, layers 5–6, Chalcolithic. – Miscellaneous bangle. D c. 10.7 cm (*Pl.* 35, 431). – State Archaeological Gallery Calcutta (not located 1982–83). – Das Gupta, P.C. 1964, 83 pl. 12.
432. **Pandu Rajar Dhibi**, Dist. Burdwan, W.B. Period II, layers 5–6, Chalcolithic. – Miscellaneous bangle. D c. 7.4 cm (*Pl.* 35, 432). – State Archaeological Gallery Calcutta (not located 1982–83). – Das Gupta, P.C. 1964, 83 pl. 12.
433. **Pandu Rajar Dhibi**, Dist. Burdwan, W.B. Period II (S.C. Mukherjee), Chalcolithic. – Knife.  $15.8 \times 2.8 \times 0.3$  (tang) cm (*Pl.* 35, 433). – State Archaeological Gallery Calcutta (no no.). – Unpub.
434. **A. B. Pandu Rajar Dhibi**, Dist. Burdwan, W.B. Period II, layers 5–6, Chalcolithic. – Miscellaneous wires. A. L 13.0 cm, B. L 7.2 cm (*Pl.* 35, 434 A. B.). – State Archaeological Gallery Calcutta (not located 1982–83). – Mukherjee, S.C. 1967, 40 pl. oppos. p. 40, nos. 5, 6.
435. **Parihati**, Dist. Midnapur, W.B. – Double axe, type I.  $27.4 \times 23.9 \times 0.52$  cm, 1015 gm (*Pl.* 36, 435). – Dept. of Archaeology Calcutta Univ. (822/77). – Ray, A./A.K. Datta 1978, 62.
436. **Parihati**, Dist. Midnapur, W.B. – Double axe, type I.  $23.1 \times 20.5 \times 0.5$  cm, 520 gm (*Pl.* 36, 436). – Dept. of Archaeology Calcutta Univ. (823/77). – Ray, A./A.K. Datta 1978, 68 pl. 1, 2.
437. **Parihati**, Dist. Midnapur, W.B. – Double axe, type I.  $25.3 \times 21.1 \times 0.6$  cm, 720 gm (*Pl.* 36, 437). – Dept. of Archaeology Calcutta Univ. (824/77). – Ray, A./A.K. Datta 1978, 62 pl. 1, 2.
438. **Parihati**, Dist. Midnapur, W.B. – Double axe, type I.  $31.5 \times 25.4$  (pres.)  $\times 0.62$  cm, 1830 gm, one tip of the main blade broken off (*Pl.* 36, 438). – Dept. of Archaeology Calcutta Univ. (825/77). – Ray, A./A.K. Datta 1978, 62 pl. 1, 2.
439. **Parihati**, Dist. Midnapur, W.B. – Double axe, type I.  $36.3 \times 28.2$  (pres.)  $\times 0.48$  cm, 1720 gm, one tip of the lead edge broken off (*Pl.* 37, 439). – Dept. of Archaeology Calcutta Univ. (826/77). – Ray, A./A.K. Datta 1978, 62.
440. **Parihati**, Dist. Midnapur, W.B. – Bar.  $27.8 \times 2.82 \times 1.71$  cm, 700 gm (*Pl.* 37, 440). – Dept. of Archaeology Calcutta Univ. (820/77). – Ray, A./A.K. Datta 1978, 62 pl. 2, 1.
441. **Parihati**, Dist. Midnapur, W.B. – Votive bangle (?).  $18.6 \times 15.5 \times 4.1$  cm, 2600 gm (Ray/Datta), large ring-like object the ends of which do not meet, ends formed into discs, solid cast (*Pl.* 37, 441). – Dept. of Archaeology Calcutta Univ. (821/77). – Ray, A./A.K. Datta 1978, 62–63 pl. 3.



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442. *Eran*, Dist. Sagar, M.P. Period I, Chalcolithic. – Miscellaneous axe. c.  $12.9 \times 9.6$  (pres.) cm (*Pl.* 37, 442). – Present whereabouts unknown. – Bajpai, K.D. 1965, 11 pl. 32 B.
443. *Gungeria*, Dist. Balaghat, M.P. – Axe, type IIIa.  $11.9 \times 7.2 \times 1.3$  cm, irregularly cast (*Pl.* 37, 443). – British Mus. (1873.11-3-24). – Unpub.
444. *Gungeria*, Dist. Balaghat, M.P. – Axe, type IV d variant.  $14.3 \times 7.2 \times 1.0$  cm, one corner bent, apparently recently (*Pl.* 37, 444). – British Mus. (1873.11-3-22). – Read, C.H. 1920, 182–183 pl. 10, 3.
445. *Gungeria*, Dist. Balaghat, M.P. – Axe, type IV f.  $17.3 \times 8.74 \times 1.8$  cm, irregularly and asymmetrically cast (*Pl.* 37, 445). – British Mus. (1873.11-3-19). – Read, C.H. 1920, 182–183 pl. 10, 2.
446. *Gungeria*, Dist. Balaghat, M.P. – Axe, type IV f.  $20.7$  (pres.)  $\times 8.07 \times 1.91$  cm, 1539 gm (Brown), butt end recently flattened (*Pl.* 37, 446). – Indian Mus. Calcutta (A 21404 Ga 5). – Bloomfield, A. 1870, 132 pl. 2; idem. c. 1890, 1–8 pl. 1, 2; Brown, J. Coggin 1917, 147 no. 5.
447. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $14.6 \times 13.2 \times 1.02$  cm, in profile asymmetrical, surface patterned lengthwise with light gouges (*Pl.* 38, 447). – British Mus. (1873.11-3-26). – Read, C.H. 1920, 182–183 pl. 10, 6.
448. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $13.6 \times 11.7 \times 0.98$  cm, in profile asymmetrical, corroded, sharp edges (*Pl.* 38, 448). – British Mus. (1873.11-3-28). – Unpub.
449. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $17.6 \times 14.4 \times 0.8$  cm, recent damage to the cutting edge (*Pl.* 38, 449). – British Mus. (1873.11-3-29). – Read, C.H. 1920, 182–183 pl. 10, 1.
450. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $17.7 \times 15.6 \times 0.9$  cm, well-formed with sharp edges (*Pl.* 38, 450). – British Mus. (1873.11-3-30). – Unpub.
451. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $17.3 \times 13.7 \times 0.8$  cm, 902 gm (Brown), slightly plano-convex, cutting edge somewhat flattened (recently) (*Pl.* 38, 451). – Indian Mus. Calcutta (A 21536 Ga 19). – Anderson, J. 1883, 424; Brown, J. Coggin 1917, 150 no. 19.
452. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $16.5 \times 15.5 \times 0.88$  cm, 992 gm (Brown) (*Pl.* 38, 452). – Indian Mus. Calcutta (A 21404 Ga 20). – Anderson, J. 1883, 424; Brown, J. Coggin 1917, 150 no. 20 pl. 10, 7.
453. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $17.0 \times 14.6 \times 1.1$  cm, 1122 gm (Brown) (*Pl.* 38, 453). – Indian Mus. Calcutta (A 21537 Ga 21). – Anderson, J. 1883, 424; Brown, J. Coggin 1917, 150 no. 21.
454. *Gungeria*, Dist. Balaghat, M.P. – Axe, type Va.  $18.5 \times 15.9 \times 1.0$  cm, 1260 gm (Brown) (*Pl.* 38, 454). – Indian Mus. Calcutta (A 21538 Ga 22). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 22.
455. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $18.9 \times 12.7 \times 1.3$  cm, rough surface (*Pl.* 38, 455). – Ashmolean Mus. Oxford (1954.66), donated by A.W. Franks 1873 or by Maj. Gen. Houghton. – Unpub.
456. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $21.8 \times 17.1 \times 1.7$  cm, sharp edges (*Pl.* 39, 456). – British Mus. (1873.11-3-10). – Unpub.
457. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $21.9 \times 15.3 \times 1.4$  cm (*Pl.* 39, 457). – British Mus. (1873.11-3-11). – Read, C.H. 1920, 182–183 pl. 10, 5.
458. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $19.7 \times 15.8 \times 1.55$  cm, green, sharp edges (*Pl.* 39, 458). – British Mus. (1873.11-3-12). – Read, C.H. 1920, 182–183 pl. 10, 4.
459. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $18.2 \times 14.5 \times 1.02$  cm (*Pl.* 39, 459). – British Mus. (1873.11-3-13). – Unpub.
460. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $18.6 \times 14.1 \times 1.64$  cm, in plan asymmetrical (*Pl.* 39, 460). – British Mus. (1873.11-3-14). – Read, C.H. 1920, 182–183 pl. 10, 13.
461. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $20.6 \times 12.1 \times 1.46$  cm, in plan somewhat asymmetrical (*Pl.* 39, 461). – British Mus. (1873.11-3-15). – Unpub.
462. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $19.0 \times 12.6 \times 1.7$  cm (*Pl.* 39, 462). – British Mus. (1873.11-3-16). – Unpub.
463. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $19.5 \times 13.3 \times 2.0$  cm, dull cutting edge (*Pl.* 39, 463). – British Mus. (1873.11-3-17). – Unpub.
464. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $18.5 \times 12.8 \times 1.5$  cm, mottled surface, angular ridges and traces of hammering on two edges (*Pl.* 40, 464). – British Mus. (WG 938 1880–82). – Unpub.
465. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $20.1 \times 13.2 \times 1.4$  cm, edges sharp (*Pl.* 40, 465). – British Mus. (WG 1880–83). – Unpub.
466. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII. Dimensions unknown (*Pl.* 40, 466). – Ethnographical Mus. Copenhagen. – Franks, A.W. 1876, 23 fig. 6; Montelius, O. 1900, 133–134 fig. 328.
467. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $15.5 \times 9.8 \times 2.0$  cm (*Pl.* 40, 467). – National Mus. Copenhagen (OB II B4). – Unpub.
468. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $13.7 \times 9.1 \times 1.22$  cm, 706 gm (Brown) (*Pl.* 40, 468). –

- Indian Mus. Calcutta (A 21 525 Ga 6). – Anderson, J. 1883, 420; Brown, J. Coggin 1917, 147–148 no. 6.
469. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $17.4 \times 9.7 \times 1.31$  cm, 875 gm (Brown) (*Pl. 40, 469*). – Indian Mus. Calcutta (A 21 402 Ga 8). – Anderson, J. 1883, 421; Brown, J. Coggin 1917, 148 no. 8 pl. 10, 5.
470. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $22.6 \times 16.8 \times 1.86$  cm, 2116 gm (Brown) (*Pl. 40, 470*). – Indian Mus. Calcutta (A 21 527 Ga 9). – Anderson, J. 1883, 421–422; Brown, J. Coggin 1917, 148–149.
471. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $21.5$  (pres.)  $\times 15.0 \times 1.62$  cm, 1810 gm (Brown), butt end recently broken off (*Pl. 40, 471*). – Indian Mus. Calcutta (A 21 528 Ga 10). – Anderson, J. 1883, 422; Brown, J. Coggin 1917, 149 no. 10.
472. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $19.0 \times 14.9 \times 1.5$  cm, 1458 gm (Brown) (*Pl. 40, 472*). – Indian Mus. Calcutta (A 21 529 Ga 11). – Anderson, J. 1883, 422; Brown, J. Coggin 1917, 149 no. 11.
473. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $20.2 \times 13.8 \times 1.57$  cm, 1641 gm (Brown) (*Pl. 41, 473*). – Indian Mus. Calcutta (A 21 530 Ga 12). – Anderson, J. 1883, 422; Brown, J. Coggin 1917, 149 pl. 10, 1.
474. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $21.7 \times 14.5 \times 1.3$  cm, 1630 gm (Brown) (*Pl. 41, 474*). – Indian Mus. Calcutta (A 21 531 Ga 13). – Anderson, J. 1883, 423; Brown, J. Coggin 1917, 149.
475. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $23.0 \times 15.5 \times 1.25$  cm, 1875 gm (Brown), in plan asymmetrical (*Pl. 41, 475*). – Indian Mus. Calcutta (A 21 532 Ga 14). – Anderson, J. 1883, 423; Brown, J. Coggin 1917, 149.
476. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $19.21 \times 13.73$  cm (*Pl. 41, 476*). – National Mus. Dublin (1873.47). – Smith, V.A. 1905, 233 pl. 5, 5; Lal, B.B. 1953, 92 fig. 5, 9; Gordon, D.H. 1958, 136 fig. 17, 9.
477. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $15.97 \times 10.89$  cm (*Pl. 41, 477*). – National Mus. Dublin (1873.49). – Smith, V.A. 1905, 233 pl. 5, 4.
478. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $19.5 \times 13.1 \times 1.4$  cm (*Pl. 41, 478*). – University Mus. of Archaeology and Anthropology, Cambridge (1922.1475). – Unpub.
479. *Gungeria*, Dist. Balaghat, M.P. – Axe, type VII.  $21.3 \times 12.7 \times 1.4$  cm (*Pl. 41, 479*). – University Mus. of Archaeology and Anthropology, Cambridge (1922.1476). – Unpub.
480. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $14.1 \times 10.0 \times 1.4$  cm (*Pl. 41, 480*). – British Mus. (1873.11-3.18). – Unpub.
481. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $15.8 \times 10.5 \times 1.6$  cm, irregularly formed (*Pl. 41, 481*). – British Mus. (1873.11-3.20). – Read, C.H. 1920, 182–183 pl. 10, 7.
482. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $13.9 \times 8.6 \times 1.4$  cm, irregularly shaped (*Pl. 42, 482*). – British Mus. (1873.11-3.21). – Unpub.
483. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $13.5 \times 9.9 \times 0.96$  cm, green patina (*Pl. 42, 483*). – British Mus. (1873.11-3.23). – Unpub.
484. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $15.8 \times 9.4 \times 1.22$  cm, irregularly formed (*Pl. 42, 484*). – British Mus. (1873.11-3.25). – Read, C.H. 1920, 182–183 pl. 10, 8.
485. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $13.4 \times 12.2 \times 1.03$  cm, irregularly formed, green patina (*Pl. 42, 485*). – British Mus. (1873.11-3.27). – Read, C.H. 1920, 182–183 pl. 10, 9.
486. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $12.6 \times 7.9 \times 1.2$  cm, 514 gm (Brown) (*Pl. 42, 486*). – Indian Mus. Calcutta (A 21 526 Ga 7). – Anderson, J. 1883, 420; Brown, J. Coggin 1917, 148 no. 7 pl. 10, 3.
487. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $14.5 \times 12.7 \times 1.28$  cm, 853 gm (Brown), roughly formed (*Pl. 42, 487*). – Indian Mus. Calcutta (A 21 533 Ga 15). – Anderson, J. 1883, 423; Brown, J. Coggin 1917, 149–150 no. 15 pl. 10, 8.
488. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $14.24 \times 12.06$  cm (*Pl. 42, 488*). – National Mus. Dublin (1873.48). – Smith, V.A. 1905, 233 pl. 5, 6.
489. *Gungeria*, Dist. Balaghat, M.P. – Axe-ingot, type IV.  $14.27 \times 10.46$  cm (*Pl. 42, 489*). – National Mus. Dublin (1873.50). – Smith, V.A. 1905, 233 pl. 5, 3.
490. *Gungeria*, Dist. Balaghat, M.P. – Bar celt.  $68.4 \times 5.9 \times 1.3$  cm (*Pl. 42, 490*). – British Mus. (1873.11-3.1). – Read, C.H. 1920, 182–183 pl. 10, 11.
491. *Gungeria*, Dist. Balaghat, M.P. – Bar celt.  $61.7 \times 8.0 \times 2.1$  cm, hammer marks visible (*Pl. 42, 491*). – British Mus. (1873.11-3.2). – Read, C.H. 1920, 182–183 pl. 10, 12.
492. *Gungeria*, Dist. Balaghat, M.P. – Bar celt.  $56.2 \times 10.2 \times 0.6$  cm, sharp cutting edge, butt end slightly bent (*Pl. 43, 492*). – British Mus. (1873.11-3.3). – Unpub.
493. *Gungeria*, Dist. Balaghat, M.P. – Bar celt.  $53.2 \times 8.4 \times 1.12$  cm, cutting edge slightly damaged (*Pl. 43, 493*). – British Mus. (1873.11-3.4). – Unpub.
494. *Gungeria*, Dist. Balaghat, M.P. – Bar celt.  $50.8 \times 9.35 \times 1.13$  cm, repeated hammer marks of the same size along the upper edges causing a rippling effect (*Pl. 43, 494*). – British Mus. (1873.11-3.5). – Unpub.
495. *Gungeria*, Dist. Balaghat, M.P. – Bar celt.  $48.6 \times 8.9 \times 1.2$  cm, upper edges decorated as above

- (*Pl.* 43, 495). – British Mus. (1873.11-3.6). – Read, C.H. 1920, 182–183 pl. 10, 10.
496. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 48.1 × 5.6 × 0.8 cm, cutting edge recently damaged (*Pl.* 44, 496). – British Mus. (1873.11-3.7). – Unpub.
497. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 43.8 × 5.94 × 1.13 cm green patina, somewhat corroded (*Pl.* 44, 497). – British Mus. (1873.11-3.8). – Unpub.
498. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 43.3 × 5.7 × 1.8 cm (*Pl.* 44, 498). – British Mus. (1873.11-3.9). – Unpub.
499. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 60.8 × 6.8 × 2.1 cm, 4717 gm (Anderson), edges worked flat (*Pl.* 44, 499). – Indian Mus. Calcutta (A 21 521 Ga 1). – Anderson, J. 1883, 418–419; Brown, J. Coggin 1917, 146–147 no. 1; Lal, B.B. 1953, 92 fig. 5, 13; Gordon, D.H. 1958, 136 fig. 17, 13.
500. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 49.2 × 4.6 × 0.94 cm, 845 gm (Brown) (*Pl.* 44, 500). – Indian Mus. Calcutta (A 21 522 A Ga 2). – Anderson, J. 1883, 419; Brown, J. Coggin 1917, 147 no. 2.
501. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 40.1 × 4.9 × 1.8 cm, 1486 gm (Brown), butt end damaged recently (*Pl.* 45, 501). – Indian Mus. Calcutta (A 21 532 Ga 3). – Anderson, J. 1883, 419; Brown, J. Coggin 1917, 147 no. 3.
502. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 30.3 × 7.3 × 1.83 cm, 1574 gm (Brown) (*Pl.* 45, 502). – Indian Mus. Calcutta (A 21 524 Ga 4). – Anderson, J. 1883, 419; Brown, J. Coggin 1917, 147 no. 4; Lal, B.B. 1951, 32–33 fig. 5, 2 pl. 11 B; Müller-Karpe, H. 1980 pl. 564 B.
503. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 57.3 × 10.0 × 0.64 cm, 1051 gm (Brown), surface covered with hammer marks, repeated hammer marks of the same size line the edges (*Pl.* 45, 503). – Indian Mus. Calcutta (A 21 534 Ga 16). – Anderson, J. 1883, 423; Brown, J. Coggin 1917, 150 no. 16; Gordon, D.H. 1958, 136 fig. 17, 12.
504. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 55.3 × 9.8 × 0.9 cm, 1330 gm (Brown) (*Pl.* 45, 504). – Indian Mus. Calcutta (A 21 535 Ga 17). – Anderson, J. 1883, 424; Brown, J. Coggin 1917, 150 no. 17.
505. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 50.0 × 8.66 (pres.) × 0.72 cm, 832 gm (Brown) (*Pl.* 45, 505). – Indian Mus. Calcutta (A 21 403 Ga 18). – Anderson, J. 1883, 424; Brown, J. Coggin 1917, 150 no. 18.
506. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 48.5 × 7.3 × 0.7 cm (*Pl.* 46, 506). – National Mus. Copenhagen (OB II B 3). – Franks, A.W. 1876, 23 fig. 5; Montelius, O. 1900, 134 fig. 327.
507. *Gungeria*, Dist. Balaghat, M.P. – Bar celt. 51.75 × 7.92 cm (*Pl.* 46, 507). – National Mus. Dublin (1873.51). – Smith, V.A. 1905, 233 pl. 5, 7.
508. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 12.2 × 6.6 × 0.01 cm, silver, hammered from the centre toward the peripherae, originally slightly convex, now flattened and thus wrinkled, edge hatched in places (*Pl.* 46, 508). – British Mus. (1873.11-3.34). – Unpub.
509. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 13.3 × c. 7.5 cm, silver, slightly convex (*Pl.* 46, 509). – British Mus. (1894.7-27.56). – Unpub.
510. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 11.8 × c. 7.0 (pres.) × 0.01 cm, silver, somewhat convex (*Pl.* 46, 510). – British Mus. (1894.7-27.57). – Unpub.
511. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 12.0 × 6.65 cm, silver, somewhat convex (*Pl.* 46, 511). – British Mus. (1894.7-27.58). – Gordon, D.H. 1958 pl. 27 c; Rau, W. 1974, 67 fig. 6.
512. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 13.6 × 7.6 × 0.03 cm, silver, flattened (*Pl.* 46, 512). – Indian Mus. Calcutta (A 21 544 Ga 28). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 28.
513. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 13.6 × 7.7 × 0.03 cm, silver, flattened (*Pl.* 46, 513). – Indian Mus. Calcutta (A 21 540 Ga 29). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 29.
514. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 13.0 × 7.1 × 0.04 cm, silver, flattened (*Pl.* 46, 514). – Indian Mus. Calcutta (Ga 30). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 30.<sup>14</sup>
515. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type I. 12.79 × 7.2 cm, silver, upper edge damaged, presented by Lt. Col. Keating, Bombay Staff Corps (*Pl.* 46, 515). – National Mus. Dublin (1873.53). – Smith, V.A. 1905, 233 pl. 5, 2.
516. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type II. 13.8 × 9.5 cm, silver, originally slightly convex, line impressed on the peripherae, edges damaged (*Pl.* 46, 516). – British Mus. (1873.11-3.33). – Unpub.
517. *Gungeria*, Dist. Balaghat, M.P. – Bucranion, type II. 12.7 × c. 9.72 cm, silver, flattened, perforated from corrosion (*Pl.* 46, 517). – British Mus. (1894.7-27.55). – Unpub.
518. *Gungeria*, Dist. Balaghat, M.P. – Bucranion,

<sup>14</sup> There is some confusion as to the inventory number.

type II. 14.5 × 12.1 × 0.04 cm, silver, right side folded (*Pl. 46, 518*). – Indian Mus. Calcutta (A 21 539 Ga 23). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 23; Smith, V.A. 1905, 239.

**519. Gungeria**, Dist. Balaghat, M.P. – Bucranion, type II. 12.1 (pres.) × 12.0 cm, silver, left 'horn' torn off (*Pl. 46, 519*). – Indian Mus. Calcutta (A 21 546). – Brown, J. Coggin 1917, 151 no. 24 (?).

**520. Gungeria**, Dist. Balaghat, M.P. – Bucranion, type II. 14.2 × 10.3 × c. 0.025 cm, silver, line impressed peripheral to the edge, left 'horn' broken off (*Pl. 46, 520*). – Indian Mus. Calcutta (A 21 542 Ga 25). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 25 (?).

**521. Gungeria**, Dist. Balaghat, M.P. – Bucranion, type II. 13.8 × 10.9 × 0.05 cm, silver, line impressed peripheral to the edge, left 'horn' damaged (*Pl. 46, 521*). – Indian Mus. Calcutta (A 21 541 Ga 26). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 26.

**522. Gungeria**, Dist. Balaghat, M.P. – Bucranion, type II. 13.6 × 10.1 × 0.015 cm, silver, line impressed peripheral to the edge (*Pl. 46, 522*). – Indian Mus. Calcutta (A 21 543 Ga 27). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 27 pl. 10, 4.

**523. Gungeria**, Dist. Balaghat, M.P. – Disc. D 13.6 cm, silver, slightly convex (*Pl. 47, 523*). – British Mus. (1873.11-3.21). – Unpub.

**524. Gungeria**, Dist. Balaghat, M.P. – Disc. D 12.3 × 12.6 cm, silver, convex (c. 1.2 cm), hatching on the edge (*Pl. 47, 524*). – British Mus. (1873.11-3.32). – Unpub.

**525. Gungeria**, Dist. Balaghat, M.P. – Disc. D 13.0 cm, silver, wrinkled, flattened (*Pl. 47, 525*). – British Mus. (1894.7-27.53). – Unpub.

**526. Gungeria**, Dist. Balaghat, M.P. – Disc. 11.9 × 12.1 × 0.02 cm, H of the convexity 0.9 cm, silver, perforated from corrosion, edges hatched (*Pl. 47, 526*). – British Mus. (1894.7-27.54). – Unpub.

**527. Gungeria**, Dist. Balaghat, M.P. – Disc. 13.3 × 13.6 × 0.015 cm, silver, wrinkled, edge hatched, flattened (*Pl. 47, 527*). – Indian Mus. Calcutta

(A 21 547 Ga 31). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 31.

**528. Gungeria**, Dist. Balaghat, M.P. – Disc. D 12.3 cm, silver, edge hatched, flattened, wrinkled (*Pl. 47, 528*). – Indian Mus. Calcutta (A 21 548 Ga 32). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 32 pl. 10, 6.

**529. Gungeria**, Dist. Balaghat, M.P. – Disc. 11.75 × 0.05 cm, silver, edge hatched, flattened, wrinkled (*Pl. 47, 529*). – Indian Mus. Calcutta (A 21 549 Ga 33). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 33.

**530. Gungeria**, Dist. Balaghat, M.P. – Disc. 7.1 × 4.2 × 0.025 cm, silver, fragment, perforated on the edge (*Pl. 47, 530*). – Indian Mus. Calcutta (A 21 550 Ga 34). – Anderson, J. 1883, 425; Brown, J. Coggin 1917, 151 no. 34.

**531. Gungeria**, Dist. Balaghat, M.P. – Disc. D 11.73 cm, silver, wrinkled (*Pl. 47, 531*). – National Mus. Dublin (1873.52). – Smith, V.A. 1905, 233 pl. 5, 1.

**532. Pondi**, Dist. Rewa, M.P. – Axe, type IIIa. 18.7 × 14.4 × 1.3 cm, 2010 gm, very good workmanship, symmetrical form, slight traces of hammering, some tiny superficial cracks visible, copper-red colour (*Pl. 47, 532*). – Municipal Mus. Allahabad (7). – Lal, B.B. 1951, 22. 24. 38 A fig. 2, 6 pl. 6 B, 3.

**533. Pondi**, Dist. Rewa, M.P. – Bangle, type I. D 9.4–9.7 cm, wire D 1.6 cm, 420 gm, join sawed true?, copper-red colour (*Pl. 47, 533*). – Municipal Mus. Allahabad (no no.). – Lal, B.B. 1951, 22–23 fig. 2, 2 pl. 6 B, 1.

**534. Pondi**, Dist. Rewa, M.P. – Bangle, type I. D 10.2 × 10.4 cm, wire D 1.49 cm, 465 gm, ends nearly touch, partially cut through recently, copper-red colour (*Pl. 47, 534*). – Municipal Mus. Allahabad (no no.). – Lal, B.B. 1951, 22–23 pl. 6 B, 2; idem. 1953, 92 fig. 5, 6; Gordon, D.H. 1958, 136 fig. 17, 6.

**535. Pondi**, Dist. Rewa, M.P. – Bangle, type I. D 9.71–10.03 cm, wire D 1.61 cm, 475 gm, grainy surface, copper-red colour (*Pl. 47, 535*). – Municipal Mus. Allahabad (no no.). – Lal, B.B. 1951, 22.

## OTHER FINDS AND TYPOLOGY

### ANTHROPOMORPHS

Anthropomorphs occur in a variety of shapes and sizes (*Plate A*). Two basic types dominate, as defined by the proportions in combination with certain morphological features. All show processes suggestive of a human head, arms and legs. With one exception (no. 539) all are highly geometricizing and flat.

## Type I

Fashioned from thick metal sheeting, these artifacts have stocky proportions and are patterned on both sides with elongated gouges or dents which usually are lengthwise oriented. Sometimes, however, the patterning is chevroned or cross-hatched. Significantly, the upper edge of the 'head' shows no thickening, as is the case of type II anthropomorphs. Examples have come to light at mid doab and a broken anthropomorph from distant Lothal as well. The only stratified example derives from Lothal, level IV.<sup>15</sup>

H range	23.2–24.1 cm
mean	23.81 cm
L/W range	0.65–0.88:1
mean	0.78:1
Weight mean	1260 gm
Examples:	4

**536. Provenance unknown.** – 24.13 × 29.84 cm, surface patterned with chevron-hatching, encrusted with dirt and corrosion products (*Pl.* 47, 536). – Robin B. Martin Coll. on loan to the Brooklyn Mus. (L70.27 P). – Chakrabarty, D.K. 1977.

## Type II

Type II anthropomorphs are proportionately longer than those of type I and show a curious and distinctive thickening of the metal on the upper margin of the 'head'. In section the 'arms' are triangular, the most acute angle facing outward. The 'legs' and 'trunk' are rectangular in cross section. Dashes gouged lengthwise pattern both sides but on the 'legs' of some they are oriented oblique to the length. These artifacts are morphologically homogenous except for no. 241, which has a proportionately broader 'head', shorter 'arms' and 'legs' and a broader trunk. It is included as a variant. The majority of these anthropomorphs have come to light in hoards from near the Ganges in the Kanpur area.

H range	30.2–47.9 cm
mean	39.19 cm
L/W range	1.05–1.27:1
mean	1.16:1
Weight range	c. 3000–c. 6000 gm
mean	c. 4500 gm
Examples:	7

**537. Chandausi,** Dist. Moradabad, U.P. – C. 44.8 × 41.3 × 2.0 (at 'head') cm, entire surface patterned, 'legs' recently broken off (*Pl.* 48, 537). – National Mus. Delhi. – Knauth, P. 1974, 109; Anon. 1975, 81 pl. 55; Pant, G.N. 1978 pl. 5, 12.

**538. Ambala,** Dist. Ambala, Har. – 12.1 (pres.) × 4.13 (pres.) × 0.6 cm, 150 gm, corroded arm fragment, surface patterned on both sides, broken edges clearly visible above and below (*Pl.* 48, 538). – Kanya Gurukul Mus. Narela (250). – Unpub.

## Miscellaneous anthropomorph

**539. Dist. Manbhum** (Dist. Dhanbad), Bi. – 16.9 × 14.5 × 1.3 cm, 1230 gm, rough cast, deep indentation in upper extremity, dark green patina (*Pl.* 48, 539). – Patna Mus. (240). – Agrawal, P.K. 1968, 96–98 pl. 11.

<sup>15</sup> Supra 18.

## ARROWHEADS

A great variety of shapes and sizes exists, as best attested by the finds excavated from Ganeshwar. In view of this and the large number of still unpublished examples from there, a typology of arrowheads seems premature at this time.<sup>16</sup> These simple arrowheads have a superficial resemblance to several Harappan examples. At least it is certain that all are fashioned from relatively thin (c. 1.0 mm) sheet metal. Many show traces where the original wooden shaft overlapped the arrowhead and was glued. This is indicated by a difference in the corrosion and traces of the adhesive itself. Extant arrowheads have appeared in stratified contexts only at Bagor and Ganeshwar in Rajasthan and further south in Navdatoli.

L range	2.0 × 6.1 cm
mean	3.01 cm
L/W range	0.82–2.41:1
mean	1.22:1
Examples:	25

## DOUBLE AXES

Double axes fall into two clearly definable morphological groups, the first of which consists of examples with large violin-shaped blades. The second is composed of bow-shaped axes, the two cutting edges of which form an imaginary line which converges to a point where the end of the wooden handle would be. Two miniature axes from Hallur are comparable neither in shape nor size with the other double axes and are dissimilar to each other in shape as well.

## Type I

In plan these axes are formed by opposed and convex cutting edges, one of which is wider and/or longer than the other. The sides curve inward at the waist and the two opposing pairs of blade tips draw close to each other. In profile the cutting edges of the examples studied here (except for the lead edge of no. 436) are square and dull. In cross section and in profile these well-made blades are slightly yet distinctly biconvex. Morphologically speaking, they form a relatively homogeneous group of artifacts of an almost grotesquely large size. All type I double axes derive from hoards around the eastern fringes of the Chota Nagpur area.

L range	23.1–46.5 cm
mean	30.33 cm
L/W range	1.11–1.26:1
mean	1.17:1
Weight range	280–2300 gm
mean	1199 gm
Examples:	8

<sup>16</sup> Misra's typology does not account for the variability of the material. Misra, V.N. 1970, 223.

## Type II

These double axes, sometimes called *parasu* (Hindi, Sanskrit), have in plan two bilaterally symmetrical cutting edges, one at each end of the bow-shaped blade. Invariably the cutting edges are broader than the middle of the blade and are usually convex. Examples are known from Ahar in southern Rajasthan, Kurada in central Rajasthan and Mitathal in southwestern Haryana. The only stratified example, from Mitathal (no. 211) layer IIB, has been assigned by Suraj Bhan to the Late Harappan Culture.

L range	7.6–16.5 cm
mean	13.6 cm
L/W* range	2.71–3.97:1
mean	3.19:1
Examples:	6

## FLAT AXES

Plain flat axes (palstaves) can be divided into seven broadly defined classes on the basis of the ratio of the length to the width and are further subdivided by more specific morphological features.

Type I axes have nearly straight and parallel sides and squat proportions (mean 1.19:1).

Type II axes tend to be proportionately somewhat longer (mean 1.31:1) and are trapezoidal in shape.

Proportionately still longer are type III axes, the L/MW ratio of which ranges from 1.11:1 to 2.57:1, with a mean of 1.78:1. They tend to be trapezoidal in shape. Certain subgroups can be singled out.

The most slender axes comprise type IV. The L/MW ratio ranges from 2.14 to 5.78:1 with a mean of 3.68:1.

Type V axes are shouldered.

In plan the butts of type VI winged axes are proportionately small and formed by two lugs which were hafted to the handle.

Type VII axes have an extremely broad cutting edge, concave sides and a narrow butt.

A few hapakes also occur.

## Type I

Viewed in plan, these axes have straight or nearly straight and parallel sides. The cutting edge is convex and the butt roughly flat, convex or slightly concave. Both in profile and in cross section these blades are flat or slightly biconvex. Examples are represented in Gujarat and western Haryana. An example from Lothal seems to have been unearthed in Harappan levels and another from Somnath come to light with Post-Harappan remains.

L range	9.8–13.33 cm
mean	11.63 cm
L/MW range	1.0–1.43:1
mean	1.19:1
Examples:	4

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\* Measured from the outermost points of the blade

540. **Hansi**, Dist. Hissar, Har. –  $11.8 \times 8.1 \times 0.98$  cm, 500 gm, edges slightly flattened, corner broke off, dark green patina, smooth surface (*Pl. 48, 540*). – Kanya Gurukul Mus. Narela (62). – Unpub.

541. **Rewari**, Dist. Mahendragarh, Har. –  $9.8 \times 7.8 \times 0.71$  cm, some surface corrosion, mineral deposits on surface, burnt, green patina (*Pl. 48, 541*). – Kanya Gurukul Mus. Narela (152). – Unpub.

## Type II

Type II axes are roughly trapezoidal in plan and have proportionately short sides, which may be slightly concave, convex or straight. Usually the butt is somewhat convex or sometimes flat. The corners tend to be rounded. In section the faces are slightly biconvex. Some examples show symmetrical arrangements of dents on one face. Often the workmanship is very good. Several appear to have been anciently worn or damaged (*infra 103, 104*). Best known from Hansi and Rewari, type II axes are also represented in Kiratpur and Bithur, to the immediate southwest of the Ganges.

L range	7.0–16.1 cm
mean	13.47 cm
L/MW range	1.04–1.6:1
mean	1.31:1
Weight range	40–1230 gm
mean	539.6 gm
Examples:	49

542. **Bithur**, Dist. Kanpur, U.P. –  $8.62 \times 7.3 \times 0.91$  cm, 305 gm, analysed. – Municipal Mus. Allahbad (no no.) (*Pl. 48, 542*). – Lal, B.B. 1951, 24–26 fig. 3.6; Müller-Karpe, H. 1980 pl. 566 C, 5.

543. **Bithur**, Dist. Kanpur, U.P. (6.9.09). –  $12.7$  (pres.)  $\times 13.4 \times 0.83$  gm, cutting edge broken, battered, very dark patina (*Pl. 48, 543*). – State Mus. Lucknow (0.34). – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2.

544. **Hansi**, Dist. Hissar, Har. –  $7.0 \times 7.9 \times 0.54$  cm, 135 gm, somewhat irregularly shaped, very smooth surface (*Pl. 49, 544*). – Kanya Gurukul Mus. Narela. – Unpub.

545. **Hansi**, Dist. Hissar, Har. –  $9.8 \times 9.0$  (pres.)  $\times 0.74$  cm, 295 gm, copper-red colour, surface spalted, right edge damaged (*Pl. 49, 545*). – Kanya Gurukul Mus. Narela (63). – Unpub.

546. **Hansi**, Dist. Hissar, Har. –  $10.58 \times 8.94 \times 0.62$  cm, 260 gm, sharp edges, dark green patina (*Pl. 49, 546*). – Kanya Gurukul Mus. Narela (65). – Unpub.

547. **Hansi**, Dist. Hissar, Har. –  $8.03 \times 6.16 \times 0.49$  cm, 40 gm, dark green patina (*Pl. 49, 547*). – Kanya Gurukul Mus. Narela (67). – Unpub.

548. **Rewari**, Dist. Mahendragarh, Har. –  $13.1 \times 12.1 \times 1.11$  cm, 795 gm, surface smooth, ancient damage (*Pl. 49, 548*). – Kanya Gurukul Mus. Narela (8). – Unpub.

549. **Rewari**, Dist. Mahendragarh, Har. –  $9.96 \times 9.44 \times 0.78$  cm, 350 gm, cutting edge dull (*Pl. 49, 549*). – Kanya Gurukul Mus. Narela (22). – Unpub.

550. **Rewari**, Dist. Mahendragarh, Har. –  $16.1 \times 12.9 \times 1.07$  cm, 1230 gm, three circular indenta-

tions aligned along the butt on one face, dull cutting edge (*Pl. 49, 550*). – Kanya Gurukul Mus. Narela (70). – Unpub.

551. **Rewari**, Dist. Mahendragarh, Har. –  $16.1$  (pres.)  $\times 11.2 \times 0.9$  cm, 830 gm, sides hammered flat, cutting edge broken, dark green patina (*Pl. 49, 551*). – Kanya Gurukul Mus. Narela (71). – Unpub.

552. **Rewari**, Dist. Mahendragarh, Har. –  $16.0 \times 12.5 \times 0.91$  cm, 1080 gm, edge dulled, incrustated with dirt and corrosion products, modern damage (*Pl. 49, 552*). – Kanya Gurukul Mus. Narela (72). – Unpub.

553. **Rewari**, Dist. Mahendragarh, Har. –  $11.6 \times 10.2 \times 0.88$  cm, 540 gm, surface corrosion and incrustations, surface partly scoured off (*Pl. 49, 553*). – Kanya Gurukul Mus. Narela (81). – Unpub.

554. **Rewari**, Dist. Mahendragarh, Har. –  $10.23 \times 9.13 \times 0.68$  cm, 310 gm, butt end hammered and modernly ground, chips from cutting edge, yellowish colour (*Pl. 49, 554*). – Kanya Gurukul Mus. Narela (85). – Unpub.

555. **Rewari**, Dist. Mahendragarh, Har. –  $11.71 \times 8.13 \times 0.72$  cm, 345 gm, all edges recently flattened, surface accretions (*Pl. 49, 555*). – Kanya Gurukul Mus. Narela (87). – Unpub.

556. **Rewari**, Dist. Mahendragarh, Har. –  $13.75 \times 11.4 \times 0.75$  cm, 590 gm, very regular in form, excellent workmanship, surface originally very smooth, edges recently flattened, front corner damaged (*Pl. 49, 556*). – Kanya Gurukul Mus. Narela (91). – Unpub.



557. **Rewari**, Dist. Mahendragarh, Har. –  $11.35 \times 10.55 \times 0.83$  cm, 540 gm, cutting edge dulled, brittle, break across middle and missing corner are recent damage (*Pl.* 49, 557). – Kanya Gurukul Mus. Narela (92). – Unpub.
558. **Rewari**, Dist. Mahendragarh, Har. –  $13.6 \times 9.7 \times 1.09$  cm, 800 gm, surface originally very smooth, light surface incrustations, one butt end corner damaged (*Pl.* 50, 558). – Kanya Gurukul Mus. Narela (93). – Unpub.
559. **Rewari**, Dist. Mahendragarh, Har. –  $12.7 \times 10.4 \times 0.91$  cm, 590 gm, cracked halfway through, light surface accretions (*Pl.* 50, 559). – Kanya Gurukul Mus. Narela (95). – Unpub.
560. **Rewari**, Dist. Mahendragarh, Har. – 11.0 (pres.)  $\times 9.6 \times 0.8$  cm, 440 gm, surface corrosion and accretions, cutting edge damaged (*Pl.* 50, 560). – Kanya Gurukul Mus. Narela (98). – Unpub.
561. **Rewari**, Dist. Mahendragarh, Har. – 10.4 (pres.)  $\times 9.2 \times 0.67$  cm, 275 gm, cutting edge damaged (*Pl.* 50, 561). – Kanya Gurukul Mus. Narela (100). – Unpub.
562. **Rewari**, Dist. Mahendragarh, Har. –  $11.7 \times 7.8 \times 0.98$  cm, 460 gm (*Pl.* 50, 562). – Kanya Gurukul Mus. Narela (101). – Unpub.
563. **Rewari**, Dist. Mahendragarh, Har. –  $13.6 \times 9.9 \times 0.83$  cm, 620 gm, three circular indentations aligned to the butt on one face, smooth green patina (*Pl.* 50, 563). – Kanya Gurukul Mus. Narela (140). – Unpub.
564. **Rewari**, Dist. Mahendragarh, Har. –  $12.8 \times 11.3 \times 0.62$  cm, 500 gm, cutting edge anciently blunted, sand incrustated (*Pl.* 50, 564). – Kanya Gurukul Mus. Narela (141). – Unpub.
565. **Rewari**, Dist. Mahendragarh, Har. –  $11.4 \times 11.3 \times 0.9$  cm, 540 gm, surface corrosion, sand incrustations (*Pl.* 50, 565). – Kanya Gurukul Mus. Narela (142). – Unpub.
566. **Rewari**, Dist. Mahendragarh, Har. –  $10.9 \times 11.9 \times 0.9$  cm, 590 gm, extremely well-preserved, very smooth surface, cutting edge somewhat worn (?) (*Pl.* 50, 566). – Kanya Gurukul Mus. Narela (143). – Unpub.
567. **Rewari**, Dist. Mahendragarh, Har. –  $9.7 \times 10.0 \times 0.58$  cm, 270 gm, cracked and warped, one side slightly flatter than the other, dark green patina occasionally visible beneath incrustations (*Pl.* 50, 567). – Kanya Gurukul Mus. Narela (144). – Unpub.
568. **Rewari**, Dist. Mahendragarh, Har. – 9.89 (pres.)  $\times 9.01 \times 0.61$  cm, 280 gm, cutting edge and corner battered (*Pl.* 50, 568). – Kanya Gurukul Mus. Narela (145). – Unpub.
569. **Rewari**, Dist. Mahendragarh, Har. – 8.9 (pres.)  $\times 9.7 \times 0.79$  cm, 330 gm, cutting edge anciently (?) blunted (*Pl.* 50, 569). – Kanya Gurukul Mus. Narela (146). – Unpub.
570. **Rewari**, Dist. Mahendragarh, Har. –  $10.1 \times 9.7 \times 0.77$  cm, 390 gm, battered, burned, surface spalling (*Pl.* 50, 570). – Kanya Gurukul Mus. Narela (151). – Unpub.
571. **Rewari**, Dist. Mahendragarh, Har. – 8.3 (pres.)  $\times 9.2 \times 0.7$  cm, 230 gm, slightly planoconvex, butt end of a broken axe, dark green patina (*Pl.* 50, 571). – Kanya Gurukul Mus. Narela (185). – Unpub.
572. **Rewari**, Dist. Mahendragarh, Har. –  $14.9 \times 13.2 \times 0.94$  cm, 960 gm, ancient damage and/or casting flaws on the cutting edge, well-preserved (*Pl.* 50, 572). – Kanya Gurukul Mus. Narela (214). – Unpub.
573. **Rewari**, Dist. Mahendragarh, Har. – 15.7 (pres.)  $\times 12.9 \times 0.72$  cm, 820 gm, casting flaw and chips at the cutting edge, edges and butt flattened and bent (*Pl.* 50, 573). – Kanya Gurukul Mus. Narela (215). – Unpub.
574. **Rewari**, Dist. Mahendragarh, Har. –  $15.0 \times 13.6 \times 0.9$  cm, 990 gm, one edge recently hammered flat, entire butt end bent, one corner of cutting edge bent, dark green patina (*Pl.* 51, 574). – Kanya Gurukul Mus. Narela (216). – Unpub.
575. **Rewari**, Dist. Mahendragarh, Har. –  $16.0 \times 12.5 \times 0.9$  cm, 960 gm, cutting edge damaged, sharp corners at butt end, casting flaws on edges (*Pl.* 51, 575). – Kanya Gurukul Mus. Narela (217). – Unpub.
576. **Rewari**, Dist. Mahendragarh, Har. –  $14.6 \times 12.7 \times 1.0$  cm, 930 gm, regular in form, one corner recently broken off (*Pl.* 51, 576). – Kanya Gurukul Mus. Narela (218). – Unpub.
577. **Rewari**, Dist. Mahendragarh, Har. –  $14.1 \times 12.8 \times 0.93$  cm, 820 gm, corner broken off of the butt end (*Pl.* 51, 577). – Kanya Gurukul Mus. Narela (219). – Unpub.
578. **Rewari**, Dist. Mahendragarh, Har. –  $12.6 \times 11.1 \times 0.9$  cm, 680 gm, dark green patina (*Pl.* 51, 578). – Kanya Gurukul Mus. Narela (220). – Unpub.
579. **Rewari**, Dist. Mahendragarh, Har. –  $12.4 \times 10.8 \times 0.9$  cm, 630 gm, copper-red colour, broken recently through the middle (*Pl.* 51, 579). – Kanya Gurukul Mus. Narela (221). – Unpub.
580. **Rewari**, Dist. Mahendragarh, Har. –  $12.1 \times 11.1 \times 0.78$  cm, 590 gm, very dark green patina (*Pl.* 51, 580). – Kanya Gurukul Mus. Narela (222). – Unpub.
581. **Rewari**, Dist. Mahendragarh, Har. –  $12.6 \times 10.9 \times 0.77$  cm, 615 gm, recent break at cutting edge (*Pl.* 51, 581). – Kanya Gurukul Mus. Narela (223). – Unpub.
582. **Rewari**, Dist. Mahendragarh, Har. –

12.8 × 10.0 × 0.8 cm, 640 gm, three circular indentations form a triangle near a corner of the butt on one face, dark green patina (*Pl.* 51, 582). – Kanya Gurukul Mus. Narela (224). – Unpub.

**583. Rewari**, Dist. Mahendragarh, Har. – 13.9 (pres.) × 12.0 × 0.91 cm, 815 gm, butt recently battered, cutting edge (recently?) chipped (*Pl.* 51, 583). – Kanya Gurukul Mus. Narela (225). – Unpub.

**584. Rewari**, Dist. Mahendragarh, Har. – 14.1 × 11.8 × 0.75 cm, 660 gm, four circular indentations arranged in a Y-shape at the centre of one face nearer the butt, modern hammer marks, edges damaged, burned (*Pl.* 51, 584). – Kanya Gurukul Mus. Narela (226). – Unpub.

**585. Rewari**, Dist. Mahendragarh, Har. – 12.2 × 9.9 × 0.73 cm, 500 gm, very dark green patina (*Pl.* 51, 585). – Kanya Gurukul Mus. Narela (227). – Unpub.

**586. Rewari**, Dist. Mahendragarh, Har. – 12.3 × 9.0 × 0.6 cm, 380 gm, surface spalling, some recent hammering (*Pl.* 52, 586). – Kanya Gurukul Mus. Narela (228). – Unpub.

**587. Rewari**, Dist. Mahendragarh, Har. – 12.2 × 10.1 × 0.8 cm, 535 gm, casting flaws on cutting edge, recent hammer marks (*Pl.* 52, 587). – Kanya Gurukul Mus. Narela (229). – Unpub.

**588. Rewari**, Dist. Mahendragarh, Har. – 11.8 × 12.1 × 0.9 cm, 640 gm, slight recent battering, dark green patina (*Pl.* 52, 588). – Kanya Gurukul Mus. Narela (230). – Unpub.

**589. Rewari**, Dist. Mahendragarh, Har. – 11.6 × 10.4 × 0.7 cm, 560 gm, three circular indentations aligned with the butt end on one face, one corner recently broken off (*Pl.* 52, 589). – Kanya Gurukul Mus. Narela (246). – Unpub.

### Type IIIa

In plan the sides of type IIIa axes generally taper in the direction of the butt end and are straight, slightly concave or convex. While the cutting edge is nearly always convex, the butt may be arched or flattish. Slightly biconvex cross sections predominate although some examples show parallel faces. Particular groups appear within this large and somewhat varied subtype. Axes from Jorwe, Gandhauri and those from Gungeria are readily identifiable as such by their characteristic shapes and surface texture. Several IIIa axes derive from hoards (Gandhauri, Gungeria, Jorwe, Nasirpur, Pariar, Pondi, Rajpur Parsu) and others from stratified contexts (Mitathal, Navdatoli). Still others derive from contexts which were excavated subsequent to the finding of the metal artifacts and which contained pottery of the second millennium (Deoti, Nasirpur, Pariar, Rajpur Parsu, Ramjipura). By far the greatest number of IIIa axes is known from the Mahendragarh district. While most have occurred on the right (south-western) side of the Ganges, some have been found as far northeast as Sitapur. Still others have turned up in such far removed places as Gungeria, Jorwe and in the Palamau and Ranchi districts.

L range 8.5–19.2 cm

mean 15.6 cm

L/MW range 1.39–2.05:1

mean 1.68:1

Weight range 205–c. 3400 gm

mean 881.2 gm

Examples: 111, including variants.

**590. Bhiwani**, Dist. Bhiwani, Har. – 19.9 × 11.1 × 0.76 cm, 930 gm, broken across the middle, badly battered, all edges flattened, one corner missing, dark green patina (*Pl.* 52, 590). – Kanya Gurukul Mus. Narela (207). – Unpub.

**591. Bithur**, Dist. Kanpur, U.P. – 15.8 × 11.7 × 1.02 cm, 920 gm, originally symmetrical, butt end cut off recently, concave-convex shape distorted from recent ham-

mering (*Pl.* 52, 591). – Municipal Mus. Allahabad (8). – Lal, B.B. 1951, 24–26 fig. 3, 3.

**592. Bithur**, Dist. Kanpur, U.P. – 15.2 × 9.6 × 0.71 cm, 595 gm, 1 butt corner broken off, mechanical surface damage, fatigue cracks from bending (*Pl.* 52, 592). – Municipal Mus. Allahabad (11). – Lal, B.B. 1951, 24–26 fig. 3, 1; Müller-Karpe, H. 1980 pl. 566 C, 1.

**593. Bithur**, Dist. Kanpur, U.P. – 16.9 × 9.8 × 1.02 cm,

- 930 gm, fine workmanship, granular (sand-cast?) rough surface, modern gouges on cutting edge (*Pl.* 52, 593). – Municipal Mus. Allahabad (no no.). – Lal, B.B. 1951, 24–26 fig. 3, 2; Müller-Karpe, H. 1980 pl. 566 C, 2.
594. **Bithur**, Dist. Kanpur, U.P. – 17.6 (pres.)  $\times$  11.5  $\times$  0.89 cm, 1085 gm, surface pitting, cutting edge modernly damaged (*Pl.* 52, 594). – Municipal Mus. Allahabad (no no.). – Lal, B.B. 1951, 24–26 fig. 3, 4; Müller-Karpe, H. 1980 pl. 566 C, 4.
595. **Bithur**, Dist. Kanpur, U.P. – 15.3  $\times$  10.09  $\times$  0.74 cm, 695 gm, excellent preservation (cleaned?), tiny superficial cracks, cutting edge chipped (*Pl.* 52, 595). – Municipal Mus. Allahabad (no no.). – Unpub.
596. **Bithur**, Dist. Kanpur, U.P. – 17.7  $\times$  10.4  $\times$  1.1 cm, 1049.72 gm (Shastri), V-shaped arrangement of small indentations on one face, chip missing from cutting edge, excellently preserved (*Pl.* 53, 596). – University Mus. of Archaeology and Anthropology, Cambridge (1930.1608). – Shastri, H. 1915, 3 pl. 2, 2.
597. **Bithur**, Dist. Kanpur, U.P. – 15.5  $\times$  12.6  $\times$  0.9 cm, bent in profile (*Pl.* 53, 597). – University Mus. of Archaeology and Anthropology, Cambridge (1930.1609). – Unpub.
598. **Bithur**, Dist. Kanpur, U.P. – 13.6  $\times$  6.8  $\times$  0.73 cm, 365 gm, one face heavily encrusted with dirt and corrosion products, cutting edge badly chipped or worn (*Pl.* 53, 598). – State Mus. Lucknow (A. 231). – Smith, V.A. 1905, 232. 234 pl. 4, 2.
599. **Bithur**, Dist. Kanpur, U.P. – 18.2  $\times$  11.0  $\times$  0.7 cm, 800 gm, left butt corner broken, smooth very dark green patina visible in places not incrustated (*Pl.* 53, 599). – State Mus. Lucknow (A. 232). – Smith, V.A. 1905, 234 pl. 4, 1.
600. **Bithur**, Dist. Kanpur, U.P. – 13.4  $\times$  8.65  $\times$  1.0 cm, 600 gm, 5 circular indentations arranged as a simple cross on one face, light secondary gouges, very dark green patina (*Pl.* 53, 600). – State Mus. Lucknow (O. 132). – Lal, B.B. 1951, 24 (?).
601. **Bithur**, Dist. Kanpur, U.P. – 17.0  $\times$  12.4  $\times$  0.7 cm, 875 gm, butt corner right flattened, light pitting, dark green patina (*Pl.* 53, 601). – State Mus. Lucknow (O. 247). – Unpub.
602. **Bithur**, Dist. Kanpur, U.P. – C. 16.87  $\times$  9.52 cm (*Pl.* 53, 602). – State Mus. Lucknow (not located 1983). – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2.
603. **Bithur**, Dist. Kanpur, U.P. – 16.51  $\times$  9.84 cm, 816.45 gm, Cu (analysed) (*Pl.* 53, 603). – Purchased 1911, present whereabouts unknown. – Shastri, H. 1915, 4 pl. 3, 3.
604. **Bithur**, Dist. Kanpur, U.P. – 14.6  $\times$  8.25 cm, 453.6 gm, Cu (analysed) (*Pl.* 53, 604). – Purchased 1911, present whereabouts unknown. – Shastri, H. 1915, 4 pl. 3, 4.
605. **Dadari**, Dist. Bhiwani, Har. – 14.7  $\times$  11.2 (pres.)  $\times$  0.9 cm, 790 gm, very regular in form, light corrosion, one corner modernly broken (*Pl.* 53, 605). – Kanya Gurukul Mus. Narela (209). – Unpub.
606. **Deoti**, Dist. Lucknow, U.P. – 9.0 (pres.)  $\times$  11.7 (pres.)  $\times$  0.8 cm, 535 gm, butt end preserved, worn, old break (!), thick green patina (*Pl.* 53, 606). – State Mus. Lucknow (G. 190). – Lal, B.B. 1951, 29. 38 A.
607. **Dist. Gorakhpur (?)**, U.P. – 18.5  $\times$  10.6  $\times$  1.0 cm, 1090 gm, very evenly formed (*Pl.* 53, 607). – Formerly State Mus. Lucknow, now Patna Mus. (3815). – Unpub.
608. **Hansi**, Dist. Hissar, Har. – 9.5 (pres.)  $\times$  10.42  $\times$  0.88 cm, 640 gm, broken across the middle, very dark green patina (*Pl.* 53, 608). – Kanya Gurukul Mus. Narela (61). – Unpub.
609. **Hansi**, Dist. Hissar, Har. – 13.0  $\times$  9.3  $\times$  0.98 cm, 515 gm, originally very smooth surface, sharp edges, dark green patina (*Pl.* 54, 609). – Kanya Gurukul Mus. Narela (64). – Unpub.
610. **Hardi**, Dist. Sitapur, U.P. – 17.14  $\times$  12.06  $\times$  0.83 cm, left butt end corner flattened, broken in the middle recently, brittle, gouged on one side (*Pl.* 54, 610). – State Mus. Lucknow (G. 60). – Lal, B.B. 1951, 23. 27 fig. 2, 4; Agrawal, D.P. et al. 1974, 17 (?).
611. **Kosam**, Dist. Allahbad, U.P. – 15.6 (pres.)  $\times$  12.9  $\times$  0.9 cm, 980 gm, 11 indentations arranged on one face in a pattern, ragged (ancient ?) chip from cutting edge (*Pl.* 54, 611). – Municipal Mus. Allahabad (no no.). – Unpub.
612. **Mujahidpur**, Dist. Hardoi, U.P. – 17.1  $\times$  13.5 (pres.)  $\times$  1.4 cm, 1660 gm, ancient edge wear, front right corner and left rear corner recently broken, thick green patina (*Pl.* 54, 612). – State Mus. Lucknow (O. 148). – Lal, B.B. 1951, 29. 38 A fig. 4, 4; Agrawal, D.P. et al. 1974 17 (?).
613. **Mathura**, Dist. Mathura, U.P. – Found by Cunningham in his excavations of the Chaubara Mound (Buddhist context). L c. 18.0 cm (?).<sup>17</sup> (*Pl.* 54, 613). – Present whereabouts unknown. – Cunningham, A. 1873, 16 pl. 2.
614. **Nankom**, P.S. Ranchi, Dist. Ranchi, Bi. – 13.0  $\times$  6.35 cm (*Pl.* 54, 614). – Formerly S.C. Roy Coll.,

<sup>17</sup> Cunningham gives the scale of the original drawing as

1:16, which is impossible. But 1:6 is in line with the sizes of other axes of this type.

then Patna Mus. (251), present whereabouts unknown. – Roy, S. C. 1920, 400. 417 pl. 20.

**615. Provenance unknown.** – 17.1 × 12.6 × 0.79 cm, 845 gm, grainy surface, slightly battered (*Pl. 54, 615*). – Municipal Mus. Allahabad (no no.). – Unpub.

**616. Provenance unknown.** – 11.3 (pres.) × 13.2 × 1.0 cm, 840 gm, front end preserved, very dark green patina (*Pl. 54, 616*). – State Mus. Lucknow (60.14). – Unpub.

**617. Provenance unknown.** – 12.91 (pres.) × 8.9 × 1.0 cm, 575 gm, front end preserved, old break (?), rough surface, nearly black (*Pl. 54, 617*). – State Mus. Lucknow (... 10970). – Unpub.

**618. Provenance unknown.** – 7.3 (pres.) × 6.6 (pres.) × 1.1 cm, back half preserved (*Pl. 54, 618*). – Indian Mus. Calcutta (A 21 516). – Unpub.

**619. Ramjipura,** Dist. East Nimar, M.P. – 14.7 × 9.05 × 0.7 cm, c. 915 gm, one corner of butt recently broken off (*Pl. 54, 619*). – Present whereabouts unknown. – Krishna, C. 1964, 99 pl. 145 B; idem. 1965, 197 plate opposite.

**620. Rewari,** Dist. Mahendragarh, Har. – 20.7 × 12.9 × 0.73 cm, 920 gm, edges flattened, dark green patina (*Pl. 54, 620*). – Kanya Gurukul Mus. Narela (9). – Unpub.

**621. Rewari,** Dist. Mahendragarh, Har. – 14.8 × 10.79 × 1.85 cm, 1510 gm, one corner broken off, recent and ancient damage (*Pl. 55, 621*). – Kanya Gurukul Mus. Narela (20). – Unpub.

**622. Rewari,** Dist. Mahendragarh, Har. – 15.5 × 11.2 × 0.71 cm, 690 gm, very regular in shape (*Pl. 55, 622*). – Kanya Gurukul Mus. Narela (73). – Unpub.

**623. Rewari,** Dist. Mahendragarh, Har. – 17.5 × 11.2 × 1.02 cm, 1070 gm, one corner recently damaged (*Pl. 55, 623*). – Kanya Gurukul Mus. Narela (74). – Unpub.

**624. Rewari,** Dist. Mahendragarh, Har. – 15.8 × 10.59 × 0.63 cm, 700 gm, very smooth surface, one front corner broken off (*Pl. 55, 624*). – Kanya Gurukul Mus. Narela (75). – Unpub.

**625. Rewari,** Dist. Mahendragarh, Har. – 17.9 (pres.) × 9.9 × 1.15 cm, 1075 gm, cutting edge broken off, surface accretions (*Pl. 55, 625*). – Kanya Gurukul Mus. Narela (76). – Unpub.

**626. Rewari,** Dist. Mahendragarh, Har. – 15.5 × 9.9 × 0.85 cm, 635 gm, one corner damaged (*Pl. 55, 626*). – Kanya Gurukul Mus. Narela (77). – Unpub.

**627. Rewari,** Dist. Mahendragarh, Har. – 13.6 × 11.0 × 0.79 cm, 635 gm, broken across the middle (*Pl. 55, 627*). – Kanya Gurukul Mus. Narela (78). – Unpub.

**628. Rewari,** Dist. Mahendragarh, Har. – 15.2 × 9.27

(pres.) × 1.0 cm, 730 gm, surface accretions, brittle, two front corners broken off (*Pl. 55, 628*). – Kanya Gurukul Mus. Narela (79). – Unpub.

**629. Rewari,** Dist. Mahendragarh, Har. – 15.3 × 9.4 × 0.88 cm, 670 gm, smooth surface, dark green patina (*Pl. 55, 629*). – Kanya Gurukul Mus. Narela (80). – Unpub.

**630. Rewari,** Dist. Mahendragarh, Har. – 12.71 × 8.87 × 0.73 cm, 440 gm, surface originally very smooth, butt end flattened, sharp cutting edge (*Pl. 55, 630*). – Kanya Gurukul Mus. Narela (82). – Unpub.

**631. Rewari,** Dist. Mahendragarh, Har. – 13.4 × 8.86 × 0.79 cm, 500 gm, edges partially sharp, dull cutting edge (*Pl. 55, 631*). – Kanya Gurukul Mus. Narela (83). – Unpub.

**632. Rewari,** Dist. Mahendragarh, Har. – 12.6 × 8.8 × 0.8 cm, 405 gm, surface incrustations, flattened cutting edge, dark green patina (*Pl. 56, 632*). – Kanya Gurukul Mus. Narela (84). – Unpub.

**633. Rewari,** Dist. Mahendragarh, Har. – 15.2 × 11.4 × 0.85 cm, 880 gm, ten indentations arranged in a V-shape with an indentation opposite the apex, traces of sand casting (*Pl. 56, 633*). – Kanya Gurukul Mus. Narela (89). – Unpub.

**634. Rewari,** Dist. Mahendragarh, Har. – 14.2 × 8.6 × 0.83 cm, 575 gm, broken across the middle, copper-red colour (*Pl. 56, 634*). – Kanya Gurukul Mus. Narela (96). – Unpub.

**635. Rewari,** Dist. Mahendragarh, Har. – 10.1 (pres.) × 9.49 × 0.92 cm, 405 gm, front half preserved, surface accretions (*Pl. 56, 635*). – Kanya Gurukul Mus. Narela (97). – Unpub.

**636. Rewari,** Dist. Mahendragarh, Har. – 13.8 × 9.8 × 0.91 cm, 640 gm, split at butt end, butt corners hammered, some surface spalling (*Pl. 56, 636*). – Kanya Gurukul Mus. Narela (99). – Unpub.

**637. Rewari,** Dist. Mahendragarh, Har. – 22.7 × 14.5 × 1.48 cm, c. 3400 gm, asymmetrical in profile, smooth dark green patina (*Pl. 56, 637*). – Kanya Gurukul Mus. Narela (114). – Unpub.

**638. Rewari,** Dist. Mahendragarh, Har. – 17.6 × 12.3 × 0.9 cm, 1055 gm, heavy corrosion products mixed with dirt (*Pl. 56, 638*). – Kanya Gurukul Mus. Narela (116). – Unpub.

**639. Rewari,** Dist. Mahendragarh, Har. – 17.9 × 11.2 × 1.21 cm, 1245 gm, four circular indentations arranged in a T-shape on one face near the butt end, corner broken off cutting edge and butt (*Pl. 56, 639*). – Kanya Gurukul Mus. Narela (117). – Unpub.

**640. Rewari,** Dist. Mahendragarh, Har. – 16.8 (pres.) × 10.3 × 1.0 cm, 1050 gm, very smooth surface, cutting edge broken (*Pl. 56, 640*). – Kanya Gurukul Mus. Narela (118). – Unpub.

641. **Rewari**, Dist. Mahendragarh, Har. –  $15.1 \times 9.2 \times 0.88$  cm, 650 gm, surface accretions, cutting edge recently sharpened (*Pl. 56, 641*). – Kanya Gurukul Mus. Narela (119). – Unpub.
642. **Rewari**, Dist. Mahendragarh, Har. –  $15.1 \times 8.06 \times 1.0$  cm, 665 gm, badly corroded, cutting edge battered (*Pl. 56, 642*). – Kanya Gurukul Mus. Narela (120). – Unpub.
643. **Rewari**, Dist. Mahendragarh, Har. –  $19.2 \times 12.4 \times 1.1$  cm, 1450 gm, originally symmetrical and well made, three corners broken off, battered, burned (*Pl. 56, 643*). – Kanya Gurukul Mus. Narela (149). – Unpub.
644. **Rewari**, Dist. Mahendragarh, Har. –  $17.9 \times 11.1 \times 0.73$  cm, 780 gm, broken across the middle, copper-red to dark green colour (*Pl. 57, 644*). – Kanya Gurukul Mus. Narela (164). – Unpub.
645. **Rewari**, Dist. Mahendragarh, Har. –  $14.4 \times 11.5 \times 1.18$  cm, 1060 gm, heavily corroded, broken anciently (*Pl. 57, 645*). – Kanya Gurukul Mus. Narela (165). – Unpub.
646. **Rewari**, Dist. Mahendragarh, Har. –  $12.5$  (pres.)  $\times 10.8 \times 1.08$  cm, 990 gm, front half preserved, greenish patina (*Pl. 57, 646*). – Kanya Gurukul Mus. Narela (166). – Unpub.
647. **Rewari**, Dist. Mahendragarh, Har. –  $12.0$  (pres.)  $\times 11.7 \times 1.08$  cm, 790 gm, front half preserved (*Pl. 57, 647*). – Kanya Gurukul Mus. Narela (167). – Unpub.
648. **Rewari**, Dist. Mahendragarh, Har. –  $9.2$  (pres.)  $\times 9.7 \times 1.0$  cm, 600 gm, front half preserved, sides flattened, dark green patina (*Pl. 57, 648*). – Kanya Gurukul Mus. Narela (168). – Unpub.
649. **Rewari**, Dist. Mahendragarh, Har. –  $11.1$  (pres.)  $\times 13.1 \times 1.0$  cm, 835 gm, front half preserved, badly battered (*Pl. 57, 649*). – Kanya Gurukul Mus. Narela (169). – Unpub.
650. **Rewari**, Dist. Mahendragarh, Har. –  $9.2$  (pres.)  $\times 11.0 \times 0.69$  cm, 350 gm, front half preserved, dark green patina (*Pl. 57, 650*). – Kanya Gurukul Mus. Narela (170). – Unpub.
651. **Rewari**, Dist. Mahendragarh, Har. –  $7.0$  (pres.)  $\times 12.1 \times 1.07$  cm, 430 gm, front part preserved (*Pl. 57, 651*). – Kanya Gurukul Mus. Narela (171). – Unpub.
652. **Rewari**, Dist. Mahendragarh, Har. –  $6.1$  (pres.)  $\times 9.01 \times 0.8$  cm, 270 gm, front part preserved, yellowish copper-colour with a dark green patina in places (*Pl. 57, 652*). – Kanya Gurukul Mus. Narela (172). – Unpub.
653. **Rewari**, Dist. Mahendragarh, Har. –  $13.1$  (pres.)  $\times 8.6 \times 1.04$  cm, 580 gm, front corner broken off recently (*Pl. 57, 653*). – Kanya Gurukul Mus. Narela (174). – Unpub.
654. **Rewari**, Dist. Mahendragarh, Har. –  $6.5 \times 5.9 \times 1.19$  cm, 230 gm, preserved is a front corner (*Pl. 57, 654*). – Kanya Gurukul Mus. Narela (175). – Unpub.
655. **Rewari**, Dist. Mahendragarh, Har. –  $7.2 \times 5.2 \times 0.71$  cm, 120 gm, butt end corner preserved, dark green patina (*Pl. 57, 655*). – Kanya Gurukul Mus. Narela (176). – Unpub.
656. **Rewari**, Dist. Mahendragarh, Har. –  $9.8$  (pres.)  $\times 11.6$  (pres.)  $\times 0.75$  cm, 430 gm, butt end preserved, surface accretions (*Pl. 57, 656*). – Kanya Gurukul Mus. Narela (180). – Unpub.
657. **Rewari**, Dist. Mahendragarh, Har. –  $8.8$  (pres.)  $\times 8.3$  (pres.)  $\times 0.89$  cm, 385 gm, smooth surface, back half preserved, corners dented, very dark green patina (*Pl. 58, 657*). – Kanya Gurukul Mus. Narela (181). – Unpub.
658. **Rewari**, Dist. Mahendragarh, Har. –  $12.6$  (pres.)  $\times 10.5$  (pres.)  $\times 1.12$  cm, 780 gm, back half preserved, yellowish-red colour (*Pl. 58, 658*). – Kanya Gurukul Mus. Narela (183). – Unpub.
659. **Rewari**, Dist. Mahendragarh, Har. –  $9.5$  (pres.)  $\times 10.0$  (pres.)  $\times 1.07$  cm, 610 gm, back half preserved, butt (secondarily?) damaged, eight circular indentations aligned parallel to the butt (*Pl. 58, 659*). – Kanya Gurukul Mus. Narela (184). – Unpub.
660. **Rewari**, Dist. Mahendragarh, Har. –  $7.7$  (pres.)  $\times 10.1$  (pres.)  $\times 1.07$  cm, slightly planoconvex, butt end preserved, burnt, edges battered (*Pl. 58, 660*). – Kanya Gurukul Mus. Narela (187). – Unpub.
661. **Rewari**, Dist. Mahendragarh, Har. –  $5.0$  (pres.)  $\times 8.0$  (pres.)  $\times 0.7$  cm, 115 gm, smooth surface, butt end preserved, edges (recently?) flattened. – yellowish-red colour (*Pl. 58, 661*). – Kanya Gurukul Mus. Narela (188). – Unpub.
662. **Rewari**, Dist. Mahendragarh, Har. –  $17.0 \times 11.0 \times 0.95$  cm, 1020 gm, sharp edges, cutting edge recently battered (*Pl. 58, 662*). – Kanya Gurukul Mus. Narela (236). – Unpub.
663. **Rewari**, Dist. Mahendragarh, Har. –  $14.2$  (pres.)  $\times 9.6 \times 0.87$  cm, 805 gm, six circular indentations arranged in a V-shape, a seventh lies inside the vortex, blade (anciently?) chipped, green patina (*Pl. 58, 663*). – Kanya Gurukul Mus. Narela (237). – Unpub.
664. **Rewari**, Dist. Mahendragarh, Har. –  $13.1$  (pres.)  $\times 13.3 \times 0.9$  cm, 890 gm, surface originally very smooth, front half preserved, traces of burning and chip from cutting edge recent (*Pl. 58, 664*). – Kanya Gurukul Mus. Narela (240). – Unpub.
665. **Rewari**, Dist. Mahendragarh, Har. –  $13.6$  (pres.)  $\times 13.2 \times 0.8$  cm, 765 gm, sharp edges, recently broken across the middle and burnt (*Pl. 58, 665*). – Kanya Gurukul Mus. Narela (241). – Unpub.

666. **Rewari**, Dist. Mahendragarh, Har. –  $15.2 \times 9.8 \times 0.65$  cm, 630 gm, four indentations arranged on one face near the butt, cutting edge recently hammered sharp, also recent is the break across the middle (*Pl.* 58, 666). – Kanya Gurukul Mus. Narela (242). – Unpub.
667. **Rewari**, Dist. Mahendragarh, Har. –  $15.3 \times 10.1 \times 0.87$  cm, 695 gm, incrustated with dirt and corrosion products (*Pl.* 58, 667). – Kanya Gurukul Mus. Narela (243). – Unpub.
668. **Rewari**, Dist. Mahendragarh, Har. –  $19.2 \times c. 8.8$  (orig.)  $\times 1.2$  cm, 505 gm, quartered recently, parts missing (*Pl.* 58, 668). – Kanya Gurukul Mus. Narela (244). – Unpub.
669. **Rewari**, Dist. Mahendragarh, Har. –  $10.0$  (pres.)  $\times 12.2 \times 1.03$  cm, 685 gm, front half preserved, recently burned and broken (*Pl.* 59, 669). – Kanya Gurukul Mus. Narela (245). – Unpub.
670. **Rewari**, Dist. Mahendragarh, Har. –  $9.2$  (pres.)  $\times 11.7 \times 0.9$  cm, 550 gm, front half preserved, very dark green patina (*Pl.* 59, 670). – Kanya Gurukul Mus. Narela (247). – Unpub.
671. **Rewari**, Dist. Mahendragarh, Har. –  $5.9$  (pres.)  $\times 9.8$  (pres.)  $\times 0.93$  cm, 280 gm, back half preserved, break recent (*Pl.* 59, 671). – Kanya Gurukul Mus. Narela (248). – Unpub.
672. **Shahabad area**, Dist. Hardoi, U.P. –  $14.6 \times 10.4 \times 0.9$  cm, leaf motif incised on one face near butt, edges corroded (*Pl.* 59, 672). – National Mus. Delhi (75.154). – Unpub.

### Type IIIa variants

673. **Rewari**, Dist. Mahendragarh, Har. –  $12.4 \times 9.1 \times 0.8$  cm, 425 gm, light surface corrosion, very dark green patina (*Pl.* 59, 673). – Kanya Gurukul Mus. Narela (2). – Unpub.
674. **Rewari**, Dist. Mahendragarh, Har. –  $14.2 \times 10.6 \times 0.87$  cm, 680 gm, one face flatter than the other, break across the middle and chip from one corner recent (*Pl.* 59, 674). – Kanya Gurukul Mus. Narela (94). – Unpub.
675. **Rewari**, Dist. Mahendragarh, Har. –  $8.5 \times 5.39 \times 0.4$  cm, 210 gm, butt end seems broken off, cutting edge bevelled only on one side, dark green patina (*Pl.* 59, 675). – Kanya Gurukul Mus. Narela (154). – Unpub.
676. **Rewari**, Dist. Mahendragarh, Har. –  $7.0$  (pres.)  $\times 5.4 \times 1.18$  cm, 215 gm, cutting edge bevelled only on one side, front half preserved (*Pl.* 59, 676). – Kanya Gurukul Mus. Narela (177). – Unpub.

### Type IIIb

In plan the convex cutting edge is decidedly wider than the body, and terminates on both sides with a slight cusp. The side edges, slightly concave, converge toward the butt. The butt itself is somewhat concave or is flat. In profile these axes are very slightly biconvex. As a group they are strikingly homogeneous in shape and proportion. Nos. 308–314 derive from Rajpur Parsu, just east of the northern doab; given the peculiarity of its shape and patina, no. 315 almost certainly also comes from this site, although nothing is otherwise known of its provenance.

L range	16.74–21.3 cm
mean	18.59 cm
L/MW range	1.39–2.05 : 1
mean	1.76 : 1
Weight range	540–1150 gm
mean	830 gm
Examples:	6

### Type IIIc

In plan the sides of IIIc axes may be straight or slightly curved. Both butt and front ends are convex and often the corners are rounded. The profiles are slightly biconvex. There is some variation in the shapes of the members of this subtype. Examples derive from Karnataka and western Maharashtra, al-

so from central Rajasthan and the Ganges at the midpoint of the doab. Stratified examples range in date from the Neolithic (of Karnataka) to the Jorwe Culture.

L range            9.2–16.5 cm  
     mean            13.8 cm  
 L/MW range    1.56–2.18:1  
     mean            1.86:1  
 Examples:       8

**677. Bithur**, Dist. Kanpur, U.P. – C.  $9.2 \times 4.56$  cm (*Pl.* 59, 677). – Municipal Mus. Allahabad (not located 1983). – Lal, B.B. 1951, 24–26 fig. 3, 7; Müller-Karpe, H. 1980 pl. 566 C, 6.

**678. Mahuadanr**, Dist. Palamau, Bi. –  $9.8 \times 5.9 \times 0.71$  cm, 205 gm, surface spalling on one face, smooth thick green patina intact on other face (*Pl.*

59, 678). – St. Xavier's College, History Dept. Ranchi (no no.). – Unpub.

**679. Shahabad area**, Dist. Hardoi, U.P. –  $15.0 \times 8.8 \times 0.9$  cm, edges corroded, rear left corner broken off, analysed (*Pl.* 59, 679). – National Mus. Delhi (75.156). – Agrawal, D.P. et al. 1974, 18.<sup>18</sup>

### Type III d

These blades are very thin. Somewhat trapezoidal in plan, they have a convex blade, a flat butt and sides which curve gently inward. All five examples were excavated from Ahar.

L range            12.7–26.6 (?) cm  
     mean            17.58 cm  
 L/MW range    1.2–1.48:1  
     mean            1.37:1  
 Examples:       5

### Type III e

In plan III e axes are roughly trapezoidal with a convex cutting edge. Their sides are straight or somewhat curved. They distinguish themselves from other type III axes by their extreme thickness. In cross section they are slightly biconvex. These axes vary considerably in size and proportion. All of the examples were obtained in western Haryana.

L range            9.6–20.1 cm  
     mean            13.83 cm  
 L/MW range    1.11–2.57:1  
     mean            1.98:1  
 Weight range   515–c. 3700 gm  
     mean            1161.1 gm  
 Examples:       6

**680. Bhiwani**, Dist. Bhiwani, Har. –  $9.6 \times 6.2 \times 1.59$  cm, 515 gm, surface rough, blackened (*Pl.* 59, 680). – Kanya Gurukul Mus. Narela (208). – Unpub.

**681. Hansi**, Dist. Hissar, Har. – 11.6 (pres.)  $\times 6.66 \times 1.4$  cm, 615 gm, recent damage to cut-

ting edge, accretions on one face (*Pl.* 59, 681). – Kanya Gurukul Mus. Narela (34). – Unpub.

**682. Hansi**, Dist. Hissar, Har. –  $14.7 \times 5.85 \times 1.18$  cm, 1050 gm, much battered recently (*Pl.* 59, 682). – Kanya Gurukul Mus. Narela (60). – Unpub.

<sup>18</sup> This piece corresponds either to the analysis P 198 or P 202. Agrawal, D.P. et al. 1974, 18.

683. **Rewari**, Dist. Mahendragarh, Har. – 13.2 × 7.22 × 1.27 cm, 720 gm, light surface corrosion, mechanically caused surface pitting, very dark green patina (*Pl.* 59, 683). – Kanya Gurukul Mus. Narela (86). – Unpub.
684. **Rewari**, Dist. Mahendragarh, Har. – 13.8 × 8.0 × 1.67 cm, 1020 gm, butt end battered, some surface accretions (*Pl.* 59, 684). – Kanya Gurukul Mus. Narela (102). – Unpub.
685. **Rewari**, Dist. Mahendragarh, Har. – 20.1 × 9.2 × 2.4 cm, c. 3700 gm, butt end battered, modern cut on one face, dark green colour (*Pl.* 60, 685). – Kanya Gurukul Mus. Narela (233). – Unpub.

## Type IV a

These axes are in general well-made. In plan they usually manifest straight, nearly parallel edges as well as a somewhat convex cutting edge. The butt is usually flat or slightly rounded. Typically the four corners are slightly angularly formed. In section the faces appear thin and very slightly biconvex. Several examples show symmetrical arrangements of circular indentations on one face, near the butt end. Type IV a blades have appeared in a variety of contexts spanning from Mahisadal in West Bengal to western Haryana. Several examples derive from hoards in the doab area but the greatest number has turned up in Rewari. The sole example deriving from a controlled archaeological excavation is no. 428 from Mahisadal.

L range 10.0–29.21 cm

mean 15.39 cm

L/MW range 2.0–5.78:1

mean 3.95:1

Weight range 80–900 gm

mean 299.4 gm

Examples: 39, including variants

686. **Hansi**, Dist. Hissar, Har. – 15.4 × 5.8 × 0.54 cm, 240 gm, cutting edge dulled, one face has a dark green patina (*Pl.* 60, 686). – Kanya Gurukul Mus. Narela (32). – Unpub.
687. **Hansi**, Dist. Hissar, Har. – 18.0 × 6.24 × 0.6 cm, 400 gm, modern damage and deep accretions (*Pl.* 60, 687). – Kanya Gurukul Mus. Narela (59). – Unpub.
688. **Hansi**, Dist. Hissar, Har. – 11.71 × 5.32 × 0.4 cm, 95 gm, cutting edge recently sharpened, recent scratching (*Pl.* 60, 688). – Kanya Gurukul Mus. Narela (66). – Unpub.
689. **Rewari**, Dist. Mahendragarh, Har. – 14.0 × 4.7 × 0.55 cm, 220 gm, smooth surface, six circular indentations arranged on one face along the butt, dull cutting edge, sides hammered (*Pl.* 60, 689). – Kanya Gurukul Mus. Narela (15). – Unpub.
690. **Rewari**, Dist. Mahendragarh, Har. – 14.7 × 4.5 × 0.53 cm, 195 gm, six circular indentations arranged in a Y-shape on one face at the butt, bent across the middle, dark green patina (*Pl.* 60, 690). – Kanya Gurukul Mus. Narela (16). – Unpub.
691. **Rewari**, Dist. Mahendragarh, Har. – 10.0 × 4.91 × 0.39 cm, 80 gm, light surface corrosion and accretions (*Pl.* 60, 691). – Kanya Gurukul Mus. Narela (19). – Unpub.
692. **Rewari**, Dist. Mahendragarh, Har. – 19.6 × 5.68 × 0.53 cm, 365 gm, dark green patina (*Pl.* 60, 692). – Kanya Gurukul Mus. Narela (23). – Unpub.
693. **Rewari**, Dist. Mahendragarh, Har. – 19.2 × 3.53 × 0.91 cm, 335 gm, surface corroded, dark green patina (*Pl.* 60, 693). – Kanya Gurukul Mus. Narela (26). – Unpub.
694. **Rewari**, Dist. Mahendragarh, Har. – 21.5 × 5.41 × 0.5 cm, 350 gm, light surface corrosion (*Pl.* 60, 694). – Kanya Gurukul Mus. Narela (104). – Unpub.
695. **Rewari**, Dist. Mahendragarh, Har. – 16.5 × 5.8 (pres.) × 0.67 cm, 360 gm, cutting edge badly battered, dark green patina (*Pl.* 60, 695). – Kanya Gurukul Mus. Narela (106). – Unpub.
696. **Rewari**, Dist. Mahendragarh, Har. – 13.7 × 6.2 × 0.61 cm, 295 gm, butt end missing, dark green patina (*Pl.* 60, 696). – Kanya Gurukul Mus. Narela (107). – Unpub.
697. **Rewari**, Dist. Mahendragarh, Har. – 15.3 (pres.) × 4.77 × 0.46 cm, 210 gm, butt broken off recently (*Pl.* 60, 697). – Kanya Gurukul Mus. Narela (108). – Unpub.
698. **Rewari**, Dist. Mahendragarh, Har. – 13.38 × 4.7 × 0.54 cm, 180 gm, four circular indenta-



tions arranged as a square near the butt, excellent preservation (*Pl.* 60, 698). – Kanya Gurukul Mus. Narela (109). – Unpub.

699. **Rewari**, Dist. Mahendragarh, Har. –  $10.75 \times 5.5 \times 0.49$  cm, 150 gm, butt end slightly battered, cutting edge modernly hammered (*Pl.* 60, 699). – Kanya Gurukul Mus. Narela (110). – Unpub.

700. **Rewari**, Dist. Mahendragarh, Har. –  $22.8$  (pres.)  $\times 6.01 \times 0.67$  cm, 560 gm, cutting edge bent and butt end bend in the opposite direction, dark green patina (*Pl.* 60, 700). – Kanya Gurukul Mus. Narela (132). – Unpub.

701. **Rewari**, Dist. Mahendragarh, Har. –  $18.6 \times 4.65 \times 0.64$  cm, 295 gm, faces very slightly convex, surface accretions and dirt, dark green patina (*Pl.* 61, 701). – Kanya Gurukul Mus. Narela (135). – Unpub.

702. **Rewari**, Dist. Mahendragarh, Har. –  $17.4 \times 3.93 \times 0.59$  cm, 240 gm, slightly asymmetrical in profile, smooth surface, dark green patina (*Pl.* 61, 702). – Kanya Gurukul Mus. Narela (136). – Unpub.

703. **Rewari**, Dist. Mahendragarh, Har. –  $12.2 \times 5.49 \times 0.52$  cm, 220 gm, butt end and cutting edge slightly battered (*Pl.* 61, 703). – Kanya Gurukul Mus. Narela (147). – Unpub.

704. **Rewari**, Dist. Mahendragarh, Har. –  $17.6 \times 4.28 \times 0.62$  cm, 240 gm, blackened, bent at the centre (*Pl.* 61, 704). – Kanya Gurukul Mus. Narela (153). – Unpub.

705. **Rewari**, Dist. Mahendragarh, Har. –  $10.2 \times 5.48 \times 0.52$  cm, 140 gm, cutting edge recently filed (*Pl.* 61, 705). – Kanya Gurukul Mus. Narela (156). – Unpub.

706. **Rewari**, Dist. Mahendragarh, Har. –  $6.8$  (pres.)  $\times 5.8 \times 0.48$  cm, 100 gm, front half preserved, cutting edge badly battered (*Pl.* 61, 706). – Kanya Gurukul Mus. Narela (173). – Unpub.

707. **Rewari**, Dist. Mahendragarh, Har. –  $5.0$  (pres.)  $\times 5.2 \times 0.37$  cm, 60 gm, front half preserved, very dark green patina (*Pl.* 61, 707). – Kanya Gurukul Mus. Narela (178). – Unpub.

708. **Rewari**, Dist. Mahendragarh, Har. –  $19.4 \times 4.8 \times 1.2$  cm, 715 gm, two circular indentations arranged in a line perpendicular to the plane of the butt end, dark green patina (*Pl.* 61, 708). – Kanya Gurukul Mus. Narela (235). – Unpub.

709. **Rewari**, Dist. Mahendragarh, Har. –  $17.5 \times 5.5 \times 0.55$  cm, 325 gm, five circular indentations faintly recognizable near the butt end which are arranged in a T-shape, bent across the middle, dark green patina (*Pl.* 61, 709). – Kanya Gurukul Mus. Narela (238). – Unpub.

710. **Rewari**, Dist. Mahendragarh, Har. –  $15.2 \times 4.5 \times 0.6$  cm, 205 gm, near the butt end at least four circular indentations faintly recognizable which are arranged in a Y-shape, green patina (*Pl.* 61, 710). – Kanya Gurukul Mus. Narela (239). – Unpub.

711. **Rewari**, Dist. Mahendragarh, Har. –  $23.8 \times 6.1 \times 1.19$  cm, 900 gm, surface very rough, copper-red colour, cutting edge recently damaged (*Pl.* 61, 711). – Kanya Gurukul Mus. Narela (269). – Unpub.

712. **Shahabad area**, Dist. Hardoi, U.P. –  $20.0 \times 5.0$  cm (*Pl.* 61, 712). – National Mus. Delhi (65.259). – Gupta, S.P. 1965, 3 pl. 1, 5; Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 60 fig. 148 pl. 5, 5.

#### *Type IVa variant*

713. **Kosam** (Kausambi), Dist. Allahabad, U.P. – Donated by Gen. A. Cunningham in 1892.  $12.5 \times 2.96 \times 0.56$  cm, corners worn smooth (*Pl.* 61,


713). – British Mus. (1892. 11–3. 89). – Smith, V.A. 1905, 232; Brown, J. Coggin 1917, 10.

#### Type IVb

Typically these well-made axes are in plan slightly trapezoidal with a more or less convex cutting edge. Generally the butt and sides are flat. In cross section the faces are parallel or very slightly biconvex and the side edges bevelled. IVb blades distinguish themselves from IVa ones in that they are considerably larger and proportionately less elongated. In size and proportion they form a homogeneous group. Several examples show symmetrical arrangements of indentations or S-motifs stamped near the butt end on one face. This type is well-represented in northeastern Rajasthan and southwestern Haryana.

L range	19.3–24.7 cm
mean	21.23 cm
L/MW range	1.9–3.0:1

mean	2.37:1
Weight range	840–2000+ gm
mean	1424 gm
Examples:	41

714. **Bhiwani**, Dist. Bhiwani, Har. –  $21.5 \times 12.6 \times 0.9$  cm, 1330 gm, two chips recently removed from the cutting edge, one side black, the other copper-red in colour (*Pl. 61, 714*). – Kanya Gurukul Mus. Narela (206). – Unpub.
715. **Hansi**, Dist. Hissar, Har. –  $21.5 \times 9.8 \times 1.21$  cm, surface spalting (*Pl. 61, 715*). – Kanya Gurukul Mus. Narela (31). – Unpub.
716. **Hansi**, Dist. Hissar, Har. –  $20.2 \times 9.74 \times 1.04$  cm (*Pl. 61, 716*). – Kanya Gurukul Mus. Narela (49). – Unpub.
717. **Hansi**, Dist. Hissar, Har. –  $20.2 \times 10.71 \times 0.9$  cm, 1280 gm, light surface corrosion, copper-red colour (*Pl. 62, 717*). – Kanya Gurukul Mus. Narela (50). – Unpub.
718. **Hansi**, Dist. Hissar, Har. –  $20.0 \times 10.89 \times 1.04$  cm, 1390 gm, four diamonds radially arranged from a cross incised on one face near the butt, surface spalting, copper-red colour (*Pl. 62, 718*). – Kanya Gurukul Mus. Narela (51). – Unpub.
719. **Hansi**, Dist. Hissar, Har. –  $20.3 \times 10.68 \times 0.8$  cm, 1300 gm, a cross from which diagonals branch off incised on one face near the butt end, copper-red colour (*Pl. 62, 719*). – Kanya Gurukul Mus. Narela (52). – Unpub.
720. **Hansi**, Dist. Hissar, Har. –  $20.2 \times 10.7 \times 0.97$  cm, 1380 gm, motif – see above, copper-red colour (*Pl. 62, 720*). – Kanya Gurukul Mus. Narela (53). – Unpub.
721. **Hansi**, Dist. Hissar, Har. –  $19.3 \times 9.13 \times 1.24$  cm, 1385 gm,  shaped motif incised near the butt end on one face, surface spalting, copper-red colour (*Pl. 62, 721*). – Kanya Gurukul Mus. Narela (54). – Unpub.
722. **Hansi**, Dist. Hissar, Har. –  $20.9 \times 10.56 \times 0.92$  cm, 1160 gm, surface spalting, copper-red colour (*Pl. 62, 722*). – Kanya Gurukul Mus. Narela (55). – Unpub.
723. **Hansi**, Dist. Hissar, Har. –  $20.0 \times 9.41 \times 0.94$  cm, 1080 gm, broken and bent across the middle, surface spalting, dark green patina (*Pl. 62, 723*). – Kanya Gurukul Mus. Narela (56). – Unpub.
724. **Hansi**, Dist. Hissar, Har. –  $27.2 \times 8.22 \times 1.07$  cm, 1200 gm, accretions (*Pl. 62, 724*). – Kanya Gurukul Mus. Narela (57). – Unpub.
725. **Kulhade-ka-Johade**, Dist. Sikar, Raj. – C.  $20.5 \times c. 9.8$  cm, arrangement of indentations aligned near the butt end (*Pl. 63, 725*). – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1978, 123 (supra n. 13).
726. **Rewari**, Dist. Mahendragarh, Har. –  $22.6$  (pres.)  $\times 9.2 \times 1.05$  cm, 1465 gm, surface smooth, cutting edge recently battered (*Pl. 63, 726*). – Kanya Gurukul Mus. Narela (12). – Unpub.
727. **Rewari**, Dist. Mahendragarh, Har. –  $20.6 \times 11.2 \times 1.3$  cm, 1700 gm, heavy incrustation, recent damage to butt and cutting edge, no sharp edges (*Pl. 63, 727*). – Kanya Gurukul Mus. Narela (13). – Unpub.
728. **Rewari**, Dist. Mahendragarh, Har. –  $22.1 \times 12.1 \times 1.2$  cm, 1800 gm, six circular indentations aligned along the butt end on one face, broken in half, surface originally very smooth, very dark green patina (*Pl. 63, 728*). – Kanya Gurukul Mus. Narela (88). – Unpub.
729. **Rewari**, Dist. Mahendragarh, Har. –  $24.7 \times 11.7 \times 1.32$  cm, 2000 gm+, surface originally very smooth, broken recently across the middle, surface accretions (*Pl. 63, 729*). – Kanya Gurukul Mus. Narela (113). – Unpub.
730. **Rewari**, Dist. Mahendragarh, Har. –  $22.4 \times 12.5 \times 1.2$  cm, 1630 gm, heavy incrustation of dirt and corrosion products, cutting edge blunted (*Pl. 63, 730*). – Kanya Gurukul Mus. Narela (115). – Unpub.
731. **Rewari**, Dist. Mahendragarh, Har. –  $21.5 \times 10.5 \times 0.98$  cm, 1380 gm, seven circular indentations aligned in axial symmetry on one face near the butt end, edges bevelled, very well preserved (*Pl. 63, 731*). – Kanya Gurukul Mus. Narela (148). – Unpub.
732. **Rewari**, Dist. Mahendragarh, Har. –  $19.4 \times 8.3 \times 0.9$  cm, 840 gm, no sharp edges, one face shows an unusual granular (casting?) surface (*Pl. 64, 732*). – Kanya Gurukul Mus. Narela (150). – Unpub.
733. **Rewari**, Dist. Mahendragarh, Har. –  $24.0 \times 10.9 \times 0.71$  cm, 1240 gm, originally four circular indentations aligned in axial symmetry on one face along the butt edge, break across the middle and blunted cutting edge both recent (*Pl. 64, 733*). – Kanya Gurukul Mus. Narela (163). – Unpub.
734. **Rewari**, Dist. Mahendragarh, Har. –  $12.4$  (pres.)  $\times 10.5$  (pres.)  $\times 0.89$  cm, 695 gm, back half preserved, six circular indentations on one face axially arranged along the butt (*Pl. 63, 734*). – Kanya Gurukul Mus. Narela (182). – Unpub.
735. **Rewari**, Dist. Mahendragarh, Har. –  $5.5$  (pres.)  $\times 10.5$  (pres.)  $\times 0.78$  cm, 210 gm, back half preserved (*Pl. 63, 735*). – Kanya Gurukul Mus. Narela (186). – Unpub.

736. **Rewari**, Dist. Mahendragarh, Har. –  $23.5 \times 12.2 \times 0.93$  cm, 1530 gm, broken across the middle, dark green patina (*Pl. 64, 736*). – Kanya Gurukul Mus. Narela (231). – Unpub.

737. **Rewari**, Dist. Mahendragarh, Har. –  $23.2 \times 10.0 \times 1.19$  cm, 1730 gm, seven hardly visible staggered indentations run parallel to the edge of the butt on one face, surface corrosion (*Pl. 64, 737*). – Kanya Gurukul Mus. Narela (232). – Unpub.

738. **Saunia**, purchased in Sardarshahar, Dist. Churu, Raj. –  $22.7 \times 8.8 \times 1.02$  cm, 1555 gm, sharp edges, biconvex hatched motif on one face near the butt, light accretions on surface, copper-red colour (*Pl. 64, 738*). – Kanya Gurukul Mus. Narela (202). – Unpub.

739. **Saunia**, purchased in Sardarshahar, Dist. Churu, Raj. –  $23.0 \times 8.8 \times 1.01$  cm, 1355 gm, very good workmanship, cutting edge recently chipped, copper-red colour (*Pl. 64, 739*). – Kanya Gurukul Mus. Narela (203). – Unpub.

### Type IVc

While in plan these blades have slender proportions, in profile they are unusually thick. IVc axes are quite large. Their straight sides are nearly parallel and converge slightly in the direction of the butt. Both the butt and the cutting edge are convex and the four corners rounded. In cross section the sides are bevelled and the faces biconvex. These axes are very regular in form and are well made. Virtually all of the examples were acquired at Rewari.

L range 23.8–30.1 cm

mean 27.24 cm

L/MW range 3.5–5.43:1

mean 4.31:1

Weight range 1380–c. 3400 gm

mean c. 2398 gm

Examples: 17

740. **Rewari**, Dist. Mahendragarh, Har. –  $28.6 \times 7.71 \times 1.83$  cm, 2000 gm, no sharp edges, smooth surface, mostly dark green patina (*Pl. 64, 740*). – Kanya Gurukul Mus. Narela (10). – Unpub.

741. **Rewari**, Dist. Mahendragarh, Har. –  $29.6 \times 8.46 \times 2.38$  cm, c. 2300 gm, very regularly formed, one corner missing on the butt (*Pl. 65, 741*). – Kanya Gurukul Mus. Narela (11). – Unpub.

742. **Rewari**, Dist. Mahendragarh, Har. –  $24.5 \times 7.84 \times 2.21$  cm, 2000 gm+, one corner of the butt recently damaged, heavy surface accretions (*Pl. 65, 742*). – Kanya Gurukul Mus. Narela (18). – Unpub.

743. **Rewari**, Dist. Mahendragarh, Har. –  $19.1$  (pres.)  $\times 5.55 \times 1.09$  cm, 620 gm, butt end broken off recently (*Pl. 65, 743*). – Kanya Gurukul Mus. Narela (105). – Unpub.

744. **Rewari**, Dist. Mahendragarh, Har. –  $29.6 \times 9.0 \times 2.01$  cm, c. 2920 gm, butt end battered (*Pl. 65, 744*). – Kanya Gurukul Mus. Narela (121). – Unpub.

745. **Rewari**, Dist. Mahendragarh, Har. –  $30.1 \times 8.4 \times 2.17$  cm, c. 3200 gm, smooth surface, one corner modernly broken off, dark green patina (*Pl. 65, 745*). – Kanya Gurukul Mus. Narela (122). – Unpub.

746. **Rewari**, Dist. Mahendragarh, Har. –

$30.1 \times 8.3 \times 2.11$  cm, c. 2700 gm, in section slightly planoconvex, cutting edge and butt broken off, dark green patina (*Pl. 65, 746*). – Kanya Gurukul Mus. Narela (123). – Unpub.

747. **Rewari**, Dist. Mahendragarh, Har. –  $30.1 \times 8.46 \times 2.29$  cm, c. 3400 gm, dark green patina (*Pl. 65, 747*). – Kanya Gurukul Mus. Narela (124). – Unpub.

748. **Rewari**, Dist. Mahendragarh, Har. –  $27.7 \times 8.2 \times 1.8$  cm, c. 2110 gm, butt end cut off recently, dark green patina (*Pl. 65, 748*). – Kanya Gurukul Mus. Narela (125). – Unpub.

749. **Rewari**, Dist. Mahendragarh, Har. –  $28.2 \times 8.4 \times 1.92$  cm, c. 2600 gm, corner broken off of the butt end, corrosion products and dark green patina (*Pl. 66, 749*). – Kanya Gurukul Mus. Narela (126). – Unpub.

750. **Rewari**, Dist. Mahendragarh, Har. –  $27.4$  (pres.)  $\times 7.8$  (pres.)  $\times 1.31$  cm, 1380 gm, smooth surface, bent and torn across the middle, front corners of the cutting edge broken off, dark green patina (*Pl. 66, 750*). – Kanya Gurukul Mus. Narela (127). – Unpub.

751. **Rewari**, Dist. Mahendragarh, Har. –  $25.9 \times 7.34 \times 3.02$  cm, c. 2700 gm, modern gouge taken out of the cutting edge, green patina (*Pl. 66, 751*). – Kanya Gurukul Mus. Narela (128). – Unpub.

752. **Rewari**, Dist. Mahendragarh, Har. – 27.4 × 7.46 × 2.18 cm, c. 2500 gm, butt end battered, heavy accretions mixed with dirt, underneath dark green patina (*Pl.* 66, 752). – Kanya Gurukul Mus. Narela (129). – Unpub.
753. **Rewari**, Dist. Mahendragarh, Har. – 25.4 × 7.0 × 1.98 cm, 1850 gm, surface somewhat rough, cutting edge dulled recently, original surface dissolved, copper-red colour (*Pl.* 66, 753). – Kanya Gurukul Mus. Narela (130). – Unpub.
754. **Rewari**, Dist. Mahendragarh, Har. – 24.0 × 7.01 × 1.93 cm, 1600 gm, one butt end corner missing, cutting edge dulled recently, dark green patina (*Pl.* 66, 754). – Kanya Gurukul Mus. Narela (131). – Unpub.
755. **Rewari**, Dist. Mahendragarh, Har. – 23.8 × 6.6 × 1.4 cm, 1115 gm, butt end cut off recently, surface accretions, dark green patina (*Pl.* 66, 755). – Kanya Gurukul Mus. Narela (133). – Unpub.
756. **Rewari**, Dist. Mahendragarh, Har. – 26.1 × 7.1 × 2.4 cm, 2650 gm, well-preserved, dark green patina (*Pl.* 66, 756). – Kanya Gurukul Mus. Narela (234). – Unpub.

## Type IV d

In plan axes of the IV d type show a convex cutting edge, narrow butt and converging side edges. In profile and in section they are bilaterally symmetrical and slightly biconvex. But for a single example from Gungeria (no. 444) all were acquired in the Shahabad area.

L range	10.5–15.6 cm
mean	13.48 cm
L/MW range	1.79–2.91:1
mean	2.23:1
Examples:	6

757. **Shahabad area**, Dist. Hardoi, U.P. – 15.6 × c. 8.9 × c. 1.3 cm (*Pl.* 67, 757). – National Mus. Delhi (65.257). – Gupta, S.P. 1965, 3 pl. 1, 7; Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 60 fig. 147 pl. 5, 6.
758. **Shahabad area**, Dist. Hardoi, U.P. – 14.0 × c. 6.9 cm (*Pl.* 67, 758). – National Mus. Delhi (65.258). – Gupta, S.P. 1965, 3 pl. 1, 8; Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 60 fig. 148, pl. 5, 7.
759. **Shahabad area**, Dist. Hardoi, U.P. – 10.5 × c. 6.93 × c. 1.5 cm (*Pl.* 67, 759). – National Mus. Delhi (66.29). – Gupta, S.P. 1965, 3 pl. 1, 6; Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 60 fig. 146 pl. 5, 8.
760. **Shahabad area**, Dist. Hardoi, U.P. – 10.9 × 5.4 × 1.0 cm, three circular indentations align the butt end on one face, analysed (*Pl.* 67, 760). – National Mus. Delhi (75.155). – Agrawal, D.P. et al. 1974, 18.
761. **Shahabad area**, Dist. Hardoi, U.P. – 15.6 × 7.7 × 1.11 cm, four circular indentations align the butt end on one face (*Pl.* 67, 761). – National Mus. Delhi (75.159). – Gupta, S.P. 1965, 3 pl. 1, 7.

Type IV e<sup>19</sup>

In plan type IV e axes show slender proportions, a convex cutting edge and sides which taper in a slightly arabesque fashion toward a smallish, set-off butt. In profile the faces are flat and parallel to each other, although at least one example shows a detectable biconvex thickening. Cross sections reveal parallel or slightly biconvex faces. The surfaces of these implements are finely finished and the workmanship is well above the norm. These artifacts have been reported in the lower doab, north central Madhya Pradesh and in western Haryana as well.

<sup>19</sup> These axes could as easily have served as adzes or chisels.

L range	14.1–21.1 cm
mean	16.66 cm
L/MW range	2.89:1–4.06:1
mean	3.1:1
Weight range	186–220 gm
mean	207.2 gm
Examples:	6

**762. Bithur**, Dist. Kanpur, U.P. – 16.2 (extended)  $\times$  5.6  $\times$  0.5 cm, 215 gm, bent and slightly twisted, thick dark green patina, metal fatigue cracks from recent bending (*Pl.* 67, 762). – State Mus. Lucknow (0.39b), accessioned 14.3. 1910. – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2.

**763. Bithur**, Dist. Kanpur, U.P. – 14.1  $\times$  4.7  $\times$  0.61 cm, 186.61 gm (Shastri), very smooth surface (*Pl.* 67, 763). – University Mus. of Archaeology and Anthropology, Cambridge (1930. 1610). – Shastri, H. 1915, 3 pl. 2, 3.

**764. Debakia**, Dist. Jabalpur, M.P. – C. 19.3  $\times$  5.4 cm (*Pl.* 67, 764). – Present whereabouts unknown. – Trivedi, C.B. 1964, 99.

**765. Rewari**, Dist. Mahendragarh, Har. – 21.0  $\times$  5.98  $\times$  0.48 cm, sharp cutting edge (*Pl.* 67, 765). – Kanya Gurukul Mus. Narela (25). – Unpub.

**766. Rewari**, Dist. Mahendragarh, Har. – 21.1  $\times$  5.16  $\times$  0.43 cm, 220 gm, casting folds visible, modern crack at the midpoint (*Pl.* 67, 766). – Kanya Gurukul Mus. Narela (197). – Unpub.

**767. Rewari**, Dist. Mahendragarh, Har. – 11.5 (pres.)  $\times$  4.7 (pres.)  $\times$  0.36 cm, 100 gm, back half preserved, recent break, copper-red colour (*Pl.* 67, 767). – Kanya Gurukul Mus. Narela (198). – Unpub.

#### Type IV f

These flat axes have slender proportions. Their sides, which in plan are slightly concave or are straight, may be nearly parallel to each other or may converge toward the butt. The cutting edge is convex and the butt squarish. Some examples which are more trapezoidally shaped, resemble in plan certain type IV d blades. The members of the IV f type, however, distinguish themselves by their extreme thickness. In cross section their side edges are convex and the section itself roughly trapezoidal; the faces are slightly biconvex. Examples have been reported at Rewari and others derive from the Gungeria hoard.

L range	14.3–20.7 cm
mean	17.93 cm
L/MW range	2.58–4.31:1
mean	3.25:1
Weight range	615–1320 gm
mean	1138.5 gm
Examples:	5

**768. Rewari**, Dist. Mahendragarh, Har. – 14.3  $\times$  5.91  $\times$  1.38 cm, 615 gm, one corner of the cutting edge damaged, yellowish colour (*Pl.* 67, 768). – Kanya Gurukul Mus. Narela (17). – Unpub.

**769. Rewari**, Dist. Mahendragarh, Har. – 17.6  $\times$  6.38  $\times$  1.58 cm, 1080 gm, surface much battered, one corner of the cutting edge broken off, yellowish-

red colour (*Pl.* 67, 769). – Kanya Gurukul Mus. Narela (103). – Unpub.

**770. Rewari**, Dist. Mahendragarh, Har. – 18.3  $\times$  5.9  $\times$  1.89 cm, 1320 gm, much battered, copper-red colour (*Pl.* 67, 770). – Kanya Gurukul Mus. Narela (134). – Unpub.

## Type Va

These so-called shouldered axes are typified by a cutting edge which in plan is roughly hemicircular. The ends of the cutting edge often comprise over half of the length. The side edges are usually slightly concave, may run in a parallel fashion to each other or may converge in the direction of the butt. The butt itself is flat. In section these axes are slightly biconvex. Often they are well-made. While most examples cluster geographically at mid doab, directly to the northeast of the Ganges, others have come to light at Gungeria and two more from Rewari in Haryana.

L range	13.06–27.0 cm
mean	18.44 cm
L/MW range	1.02–1.63:1
mean	1.35:1
Weight range	700–2 600 gm
mean	1 476.5 gm
Examples:	35

771. **Bithur** (?), Dist. Kanpur, U.P. – 18.1 × 15.5 (pres.) × 0.87 cm, 1 405 gm, very regular in shape, smooth surface, right front corner damaged, dark green patina (*Pl.* 67, 771). – Allahabad Municipal Mus. (no no.). – Unpub.

772. **Bithur**, Dist. Kanpur, U.P. – 18.0 × 14.8 (pres.) × 0.7 cm, 1 310 gm, front corners damaged, butt end left broken, break across the middle, dark green patina (*Pl.* 67, 772). – State Mus. Lucknow (0.96). – Shastri, H. 1915, 4–5 pl. 4, 6.

773. **Bithur**, Dist. Kanpur, U.P. – 19.8 × 15.5 × 0.9 cm, 1 515 gm, symmetrical, smooth surface, light pitting, very dark green patina (*Pl.* 68, 773). – Municipal Mus. Allahabad (6). – Lal, B.B. 1951, 24–26 fig. 3, 5; Müller-Karpe, H. 1980 pl. 566 C, 3.

774. **Bithur**, Dist. Kanpur, U.P. – 17.78 × 15.24 cm, break across the shoulder (*Pl.* 68, 774). – Temple of Radhakrishna on the Brahmaparta Ghat. – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2 pl. 1.

775. **Bithur**, Dist. Kanpur, U.P. – 19.98 × 15.24 cm, corners and edges battered (*Pl.* 68, 775). – Temple of Radhakrishna on the Brahmaparta Ghat. – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2 pl. 1.

776. **Bithur**, Dist. Kanpur, U.P. – 18.09 × 15.55 cm (*Pl.* 68, 776). – Temple of Radhakrishna on the Brahmaparta Ghat. – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2 pl. 1.

777. **Bithur**, Dist. Kanpur, U.P. – 16.51 × 15.24 cm, edges battered (*Pl.* 68, 777). – Temple of Radhakrishna on the Brahmaparta Ghat. – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2.

778. **Dist. Hardoi**, U.P. – 22.3 × 17.4 (pres.) × 0.8 cm, edges badly battered (*Pl.* 68, 778). – Formerly State Mus. Lucknow, now Patna Mus. (3814). – Unpub.

779. **Indilapur**, Dist. Shahjahanpur, U.P. – 27.0 × 19.2 × 1.0 cm, c. 2 600 gm, irregularly forged surface, dark green patina (*Pl.* 68, 779). – State Mus. Lucknow (44.54). – Lal, B.B. 1951, 29 fig. 3, 11 pl. 10 C.

780. **Provenance unknown**. – 17.8 × 15.0 × 0.8 cm, 1 025 gm, left butt corner bent over, thick green patina (*Pl.* 68, 780). – State Mus. Lucknow (A. 233). – Lal, B.B. 1951, 24 (as coming from Bithur).

781. **Rewari**, Dist. Mahendragarh, U.P. – 14.6 × 11.65 × 0.72 cm, 700 gm, sharp cutting edge, green patina (*Pl.* 69, 781). – Kanya Gurukul Mus. Narela (69). – Unpub.

782. **Rewari**, Dist. Mahendragarh, U.P. – 16.2 × 12.0 × 0.91 cm, 930 gm, heavily corroded, surface accretions, break across the middle (*Pl.* 69, 782). – Kanya Gurukul Mus. Narela (90). – Unpub.

783. **Shahabad area**, Dist. Hardoi, U.P. – 14.45 × 13.1 × 0.92 cm, edges badly battered, analysed (*Pl.* 69, 783). – National Mus. Delhi (75.157). – Unpub.

## Type Va variants

784. **Saguni**, Dist. Palamau, Bi. – 18.6 × 15.5 × 1.9 cm, 2 300 gm (Brown) (*Pl.* 69, 784). – Formerly E.A. Gait Coll., now Patna Mus. (252). – Brown, J. Coggin 1914a, 246 pl. 67b; idem. 1915, 125–126.

785. **Shahabad area**, Dist. Hardoi, U.P. – L 21.0 cm

(Gupta), Th c. 0.8 cm, rough surface, anciently chipped blade, dull rounded edge (*Pl.* 69, 785). – National Mus. Delhi. – Gupta, S.P. 1965, 3 pl. 1, 4; Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 60 fig. 144 pl. 5, 9.

## Type Vb

In plan these blades have relatively longish proportions and highly convex cutting edges. The sides turn in from the outermost corners of the blade and converge in roughly a straight line toward the butt, the latter which is flattish or slightly concave. The cross sections of these axes show biconvex faces. They are well-made and as a group relatively homogeneous in form. Their distribution spans an area extending from the upper to mid doab.

L range	13.3–17.93 cm
mean	15.93 cm
L/MW range	1.47–2.23 : 1
mean	1.93 : 1
Weight range	960–1180 gm
mean	1100 gm
Examples:	5

786. **Shahabad area**, Dist. Hardoi, U.P. – 13.3 × 11.4 × 0.86 cm, edges corroded, analysed (*Pl.* 69, 786). – National Mus. Delhi (75.153). – Agrawal, D.P. et al. 1974, 18.
787. **Shahabad area**, Dist. Hardoi, U.P. – 17.0 × 10.9 × 1.1 cm, well-preserved (*Pl.* 69, 787). – National Mus. Delhi (75.158). – Unpub.

## Type Vc

In plan type Vc axes show a broad and convex blade which terminates abruptly and at the point of truncation is joined by a much narrower body. In profile and section these blades are biconvex and bi-symmetrical. In their shapes Vc axes form a homogeneous group. Three of the four extant examples belong to the Gandhuli hoard, which came to light at mid doab, directly to the northeast of the Ganges.

L range	12.1–13.7 cm
mean	12.95 cm
L/MW range	1.68–1.85 : 1
mean	1.75 : 1
Weight range	480–580 gm
mean	526.66 gm
Examples:	4

788. **Provenance unknown**. – 12.1 × 12.4 × c. 0.7 cm, hammer marks on one face, thick green patina (*Pl.* 69, 788). – State Mus. Lucknow (80.13). – Unpub.

## Type Vd

Type Vd shouldered blades distinguish themselves from other type V axes by their squarish proportions. The sides are relatively straight and the lead edge is less convex than with other shouldered axes. In profile and in section these axes are usually bilaterally symmetrical and biconvex. Typical is a thick, glossy, light green patina. All of the examples were acquired from the village of Etawah and to judge from their similarity to each other, may well have derived from the same hoard.

L range	15.4–17.7 cm
mean	16.42 cm
L/MW range	1.15–1.45 : 1

mean	1.3:1
Weight range	1210–1850 gm
mean	1468 gm
Examples:	5

## Type VI winged axes

En face the cutting edge is convex and the straight sides narrow toward the small butt end, which consists of two small, pointed, bilateral 'wings', doubtless instrumental in hafting. In section the edges are bevelled and the faces slightly convex. These axes form a homogeneous group in terms of shape and size. At the butt on one face circular dots appear which are arranged into symmetrical patterns. The extant type VI axes are poorly preserved, the result of which is that at first glance it is difficult to see that they are extraordinarily well made and very regular in form. All were acquired at Rewari in the Mahendragarh district.

L range	13.8–17.2 cm
mean	15.76 cm
L/MW range	1.89–2.11:1
mean	2.0:1
Weight range	460–1095 gm
mean	728.7 gm
Examples:	4

789. **Rewari**, Dist. Mahendragarh, Har. – 16.3 × 11.5 × 0.93 cm, 760 gm, smooth surface, green patina, on one face six circular indentations arranged near the butt in axial symmetry, split in the blade (*Pl.* 69, 789). – Kanya Gurukul Mus. Narela (6). – Unpub.

790. **Rewari**, Dist. Mahendragarh, Har. – 13.8 × 9.93 × 0.66 cm, 460 gm, butt end hammered, one 'wing' broken off, dark green patina (*Pl.* 69, 790). – Kanya Gurukul Mus. Narela (68). – Unpub.

791. **Rewari**, Dist. Mahendragarh, Har. – 15.0 × 10.7 × 0.87 cm, 600 gm, on one face at the butt

end group of 4 symmetrically arranged indentations, cutting edge sharp, butt battered, dark green patina (*Pl.* 69, 791). – Kanya Gurukul Mus. Narela (111). – Unpub.

792. **Rewari**, Dist. Mahendragarh, Har. – 17.2 × 12.72 × 1.09 cm, 1095 gm, arrangement of circular indentations on one face near the butt (not visible in drawing), broken across the middle, green patina (*Pl.* 70, 792). – Kanya Gurukul Mus. Narela (112). – Unpub.

## Type VII

In plan these blades characteristically have a broad cutting edge, generally convex, but which sometimes is nearly flat. The concave sides converge from the outer points of the cutting edge toward the rounded butt and join the latter often angularly. In section these axes appear either as a trapezoid with the two faces exactly parallel or slightly planoconvex in shape. In profile, the cutting edge itself is usually quite blunt or even flat. An overall profile view shows VII axes to be distinctly planoconvex, with some bilaterally symmetrical. Except for two examples from the Chota Nagpur region, all derive from the Gungeria hoard.

L range	13.7–23.0 cm
mean	19.69 cm
L/MW range	2.03–3.22:1
mean	2.68:1



Weight range 706–2116 gm

mean 1513 gm

Examples: 27

793. **Chota Nagpur**, Bi. – 10.3 (pres.)  $\times$  14.9  $\times$  1.5 cm, 1115 gm, front half preserved, left front corner bent (*Pl.* 70, 793). – S.C. Roy Coll. Ranchi (86). – Unpub.

794. **Chota Nagpur**, Bi. – 12.2 (pres.)  $\times$  15.1  $\times$  1.3 cm,

1180 gm, front end preserved, sharp edges, encrusted with dirt (*Pl.* 70, 794). – S.C. Roy Coll. Ranchi (88). – Unpub.

### Miscellaneous flat axes

21 axes are not classifiable in the foregoing typology and cannot be treated meaningfully as a typological group.

795. **Bithur**, Dist. Kanpur, U.P. – 24.13  $\times$  8.45 cm (*Pl.* 70, 795). – Temple of Radhakrishna on the Brahmavarta Ghat. – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2.

796. **Bhiwani**, Dist. Bhiwani, Har. – 18.8  $\times$  19.1 (pres.)  $\times$  0.6 cm, 1225 gm, broken in half, side edges curled up (*Pl.* 70, 796). – Kanya Gurukul Mus. Narela (271). – Unpub.

797. **Hansi**, Dist. Hissar, Har. – 26.5  $\times$  7.2  $\times$  0.58 cm, 495 gm, side edges flat, underneath dirt and corrosion dark green patina (*Pl.* 70, 797). – Kanya Gurukul Mus. Narela (58). – Unpub.

798. **Katmandu valley**, Nepal. – 11.8  $\times$  14.2  $\times$  0.4 cm, small chip missing from cutting edge (*Pl.* 70, 798). – S. Eilenberg Coll. London (no no.). – Unpub.

799. **Provenance unknown**. – 12.7  $\times$  9.0  $\times$  1.0 cm, c. 660 gm, slightly planoconvex, surface somewhat rough, modern scratching, copper-red colour (*Pl.* 70, 799). – Bharat Kala Bhavan, Varanasi (22392), donated by Devi Nandan Pansari of Varanasi. – Anon. 1971 a, 85.

800. **Rewari**, Dist. Mahendragarh, Har. – 15.1  $\times$  13.2  $\times$  0.55 cm, 430 gm, hammer marks form roughly concentric ovals, black patina, rough surface, some surface corrosion (*Pl.* 70, 800). – Kanya Gurukul Mus. Narela (3). – Unpub.

801. **Rewari**, Dist. Mahendragarh, Har. – 22.0 (pres.)  $\times$  7.5  $\times$  0.5 cm, 440 gm, small end broken off, hammer marks on the edges of the face at the points of maximal width, scratched, modern damage (*Pl.* 70, 801). – Kanya Gurukul Mus. Narela (7). – Unpub.

802. **Rewari**, Dist. Mahendragarh, Har. – 22.9  $\times$  6.54  $\times$  0.56 cm, 430 gm, scratches (ancient?) run the length of both faces, sharp cutting edge, smooth surface, dark green patina (*Pl.* 70, 802). – Kanya Gurukul Mus. Narela (24). – Unpub.

803. **Rewari**, Dist. Mahendragarh, Har. – 16.6  $\times$  8.38  $\times$  0.41 cm, 445 gm, gouge runs parallel to the 'butt' end of one face, thick, rough, green patina (*Pl.* 71, 803). – Kanya Gurukul Mus. Narela (139). – Unpub.

804. **Rewari**, Dist. Mahendragarh, Har. – 14.3  $\times$  4.98  $\times$  0.19 cm, 75 gm (*Pl.* 71, 804). – Kanya Gurukul Mus. Narela (157). – Unpub.

805. **Rewari**, Dist. Mahendragarh, Har. – 13.3  $\times$  5.05  $\times$  0.08 cm, 35 gm, one end broken off completely, another modern break at the same end (*Pl.* 71, 805). – Kanya Gurukul Mus. Narela (158). – Unpub.

806. **Rewari**, Dist. Mahendragarh, Har. – 19.5  $\times$  6.8  $\times$  0.54 cm, 375 gm, curved in profile, recent break across the middle, dark green patina (*Pl.* 71, 806). – Kanya Gurukul Mus. Narela (162). – Unpub.

### AXE-INGOTS

At first glance these artifacts appear to be axes, but this resemblance is quickly dissipated on viewing profile and cross section views. Axe-ingots are proportionately thick and often asymmetrical in profile. Some are very large and heavy, and nearly all have dull edges. Their shapes also differ radically from those of 'finished' axes.

## Type I

In plan these curious longish artifacts are shouldered with the lead portion comprising some two-thirds of the entire length. Narrower than the lead edge, the butt end is squarish in shape. Although the axe-ingots of this type generally are reported in hoard-finds from the Chota Nagpur region, one example also was acquired in Haryana.

L range	18.0–26.2 cm
mean	19.89 cm
L/MW range	1.12–1.38:1
mean	1.26:1
Weight range	1 500–c. 3 000 gm
mean	c. 2 380 gm
Examples:	16

807. **Chota Nagpur**, Bi. – 18.0 × 13.6 × 1.2 cm, 1 500 gm, light green patina on obverse, green patina on reverse (*Pl.* 71, 807). – S.C. Roy Coll. Ranchi (127). – Unpub.

808. **Chota Nagpur**, Bi. – 24.0 × 17.6 × 1.4 cm, c. 2 600 gm (*Pl.* 71, 808). – Donated by Mr. Sapper, Manager of Chota Nagpur, Patna Mus. (6343). – Unpub.

809. **Dist. Manbhum** (Dhanbad), Bi. – <sup>20</sup> 26.2 × 20.0 × 1.3 cm, c. 3 000 gm (*Pl.* 71, 809). – S.C. Roy Coll. Ranchi (52). – Unpub.

810. **Dist. Manbhum**, (Dhanbad), Bi. – 25.2 × 19.6 × 1.1 cm, numerous hammered dents (*Pl.* 71, 810). – Formerly E.A. Gait Coll., now Patna Mus. (247). – Unpub.

811. **P.S. Bassia**, Dist. Ranchi, Bi. – 21.8 × 17.4 × c. 1.3 cm, c. 2 600 gm (*Pl.* 71, 811). – S.C. Roy Coll. Ranchi (57). – Unpub.

812. **"Thana [P.S.] Bassia"**, Dist. Ranchi, Bi. – 17.4 (pres.) × 15.7 × 1.6 cm, 2 070 gm, reverse smooth, butt

evenly formed, overall hammered patterning on obverse, front edge recently broken (*Pl.* 72, 812). – S.C. Roy Coll. Ranchi (81). – Unpub.

813. **Provenance unknown**. – 22.8 × 16.6 × 1.7 cm, in plan asymmetrical, symmetrical in profile (*Pl.* 72, 813). – Indian Mus. Calcutta (A 21518). – Unpub.

814. **Rewari**, Dist. Mahendragarh, Har. – 19.0 × 16.5 × 1.3 cm, 2 000 gm +, smooth surface, somewhat planoconvex in profile, reverse face is sunken (slightly concave) from the contraction of the molten metal while cooling, green patina (*Pl.* 72, 814). – Kanya Gurukul Mus. Narela (1). – Unpub.

815. Near **Tamajuri**, Dist. Midnapur, W.B. – 18.9 × 16.3 × 1.4 cm, 2 180 gm (Brown), smooth mottled green surface (*Pl.* 72, 815). – Indian Mus. Calcutta (no no.). – Smith, V.A. 1905, 232 pl. 2, 6; Brown, J. Coggin 1917, 142 pl. 10, 2; Gordon, D.H. 1950, 73 fig. 1, 21 (?); Ray, A./A.K. Datta 1978, 60.

## Type I variants

816. **Chota Nagpur**, Bi. – 18.0 × 14.8 × 1.4 cm, 1 610 gm, edges slightly battered, thick green patina on reverse (*Pl.* 72, 816). – S.C. Roy Coll. Ranchi (82). – Unpub.

817. **Chota Nagpur**, Bi. – 16.2 (pres.) × 13.7 × 1.4 cm, 1 460 gm, lead edge anciently chipped (*Pl.* 72, 817). – S.C. Roy Coll. Ranchi (83). – Unpub.

## Type Ia

In plan these artifacts are large, shouldered and broad, with a wide squarish butt end. In profile they invariably have blunt edges and may be bilaterally symmetrical or slightly planoconvex. Ia axe-ingots are relatively thin (av. 1.43 cm). In terms of size and shape, they form a relatively homogeneous type. Most of the examples derive from the southeast border area of present day Bihar.

<sup>20</sup> The label on the piece is hardly legible.

L range	19.0–25.9 cm
mean	22.8 cm
L/MW range	1.11–1.24:1
mean	1.16:1
Weight range	1940–c. 4000 gm
mean	c. 3293 gm
Examples:	17

818. **Chota Nagpur**, Bi. –  $23.2 \times 19.6 \times 1.5$  cm, c. 3500 gm (*Pl.* 73, 818). – S.C. Roy Coll. Ranchi (53). – Unpub.

819. **Chota Nagpur**, Bi. –  $22.4 \times 18.7 \times 1.4$  cm, c. 3000 gm (*Pl.* 73, 819). – S.C. Roy Coll. Ranchi (54). – Unpub.

820. **Chota Nagpur**, Bi. –  $19.4 \times 16.0 \times 1.0$  cm, 1940 gm (*Pl.* 73, 820). – S.C. Roy Coll. Ranchi (55). – Unpub.

821. **Chota Nagpur**, Bi. –  $21.6 \times 19.4 \times 1.8$  cm, c. 4000 gm, edges crisp, sharp, well-preserved (*Pl.* 73, 821). – S.C. Roy Coll. Ranchi (68). – Unpub.

822. **Chota Nagpur**, Bi. –  $17.2 \times 14.7 \times 1.3$  cm, 1675 gm, edges battered and corroded (*Pl.* 73, 822). – S.C. Roy Coll. Ranchi (91). – Unpub.

823. **Chota Nagpur**, Bi. –  $14.3$  (pres.)  $\times 16.0 \times 1.0$  cm, 1370 gm, front edge anciently (?) broken (*Pl.* 73, 823). – S.C. Roy Coll. Ranchi (113). – Unpub.

824. **Dist. Manbhum** (Dhanbad), Bi. –

$20.6 \times 17.2 \times 1.1$  cm, c. 2200 gm, relatively sharp edges, traces of seams from casting in a two piece mould visible on the side edges, granular weathered surface (*Pl.* 74, 824). – Donated by A. Campbell, Patna Mus. (248). – Unpub.

825. **Dist. Manbhum** (Dhanbad), Bi. –  $23.2 \times 19.1 \times 1.4$  cm, c. 3000 gm, Sn –, Ni –, Fe 0.133%, As 4.623%, Pb – (Agrawal) dark green patina (*Pl.* 74, 825). – Donated by A. Campbell, Patna Mus. (250). – Agrawal, D.P. et al. 1974, 16.

826. **Dist. Mayurbanj**, Or. –  $23.3 \times 20.5 \times 1.3$  cm, butt corner right recently dented, dark green patina (*Pl.* 74, 826). – Patna Mus. (241). – Unpub.

827. **Gola**, Dist. Hazaribagh, Bi. –  $24.4 \times 19.8 \times 1.0$  cm, c. 4000 gm (*Pl.* 74, 827). – S.C. Roy Coll. Ranchi (56). – Unpub.

828. **P.S. Bassia**, Dist. Ranchi, Bi. –  $24.4 \times 22.2 \times 1.5$  cm, c. 4000 gm, well-formed (*Pl.* 74, 828). – S.C. Roy Coll. Ranchi (51). – Unpub.

### Type Ib

In plan the lead edge of these large and 'shouldered' axe-ingots forms a semicircle spanning from 180 to 230 degrees. The butt end is narrower in width than the front and both sides curve inward. The edges are smooth and dull. In size and shape these objects form a relative homogeneous group. The majority derive from the eastern Chota Nagpur area.

L range	19.1–27.1 cm
mean	24.3 cm
L/MW range	1.08–1.28:1
mean	1.13:1
Weight range	1870–4250 gm
mean	2964 gm
Examples:	12, including variants.

829. **Chota Nagpur**, Bi. –  $19.1 \times 15.5 \times 1.2$  cm, 1870 gm, smooth surface, dark green patina (*Pl.* 75, 829). – S.C. Roy Coll. Ranchi (84). – Unpub.

### Type Ib variant

830. **Chatla**, Dist. Midnapur, W.B. – Calcutta (M205). – Gupta, S.P. 1965, 3; Chakrabarti, D.K. 1975, 293; Ghosh, A. 1973, 58 pl. 43 B.  
 $20.0 \times 17.8 \times 1.6$  cm, 2430 gm (Chakrabarti), irregularly cast (*Pl.* 75, 830). – State Archaeological Gallery

## Type II

In plan these objects characteristically have a hemicircular lead edge which often comprises more than half of the total length. Where the lead edge terminates, the sides curve inward and then back out again, sometimes reaching again this same breadth. The butt may be convex or straight. Half of the examples are symmetrical in profile and the other half slightly planoconvex, at least at the edges. In cross section the edges are usually round but sometimes are squarish. Again, about half are slightly planoconvex on the edges. Most show an irregular 'casting skin' surface. In some cases the difference with some type I axe-ingots is gradual. There is some degree of heterogeneity in the shapes. The examples derive from southern Bihar and the western part of West Bengal.

L range	7.9–19.0 cm
mean	14.55 cm
L/MW range	1.09–1.25 : 1
mean	1.16 : 1
Weight range	260–2 600 gm
mean	1 533 gm
Examples:	9

831. **Chota Nagpur area**, Bi. – 12.9 × 11.1 × 1.1 cm, surface very rough (*Pl.* 75, 831). – University Mus. of Archaeology and Anthropology, Cambridge (1943.166). – Unpub.

832. **Dist. Manbhum** (Dhanbad), Bi. – 7.9 × 7.2 × 1.1 cm, 260 gm, numerous casting bubbles visible in surface, ovoid ring cast onto obverse (*Pl.* 75, 832). – Donated by A. Campbell, Patna Mus. (242). – Unpub.

833. **Dist. Manbhum** (Dhanbad), Bi. – 13.4 × 12.8 × 1.1 cm, 990 gm, roughly formed, hammer

marks at 'waist' and butt, dark green patina (*Pl.* 75, 833). – Previously A. Campbell Coll., then Patna Mus. (243), now State Mus. Lucknow (G. 23/1). – Unpub.

834. **Dist. Manbhum** (Dhanbad), Bi. – 17.4 × 16.8 × c. 2.6 cm, c. 2 600 gm, surface very rough and unevenly formed (*Pl.* 75, 834). – Donated by A. Campbell, Patna Mus. (249). – Unpub.

835. **Kushaya**, Dist. Monghyr, Bi. – 16.2 × 13.2 × 1.66 cm, 1 757.66 gm (Mukherjee), well-preserved, casting skin (*Pl.* 75, 835). – Indian Mus. Calcutta (A 21520). – Mukherjee, G.N. 1935, 517–528.

## Type III

Typically these objects show no sharp edges or corners. In plan, their lead edges are convex and the sides taper from them to a flatish or rounded butt. Diagnostic of this type is its crude casting technique and, in section, particularly at the edges, the clear planoconvex shape. Several of the extant examples show a dimple about the size of a finger tip on the obverse face. Unlike type I and II axe-ingots, type III examples have proportionately narrower lead edges and, and are of more modest dimensions. Due to oxidation the surfaces often have a granular texture which is not true of type I axe-ingots. These objects derive almost exclusively from the eastern Chota Nagpur area within present day Bihar.

L range	13.5–22.9 cm
mean	15.2 cm
L/MW range	1.53–1.8 : 1
mean	1.65 : 1
Weight range	700–2 700 gm
mean	1 700 gm
Examples:	94

836. **Bartola**, Dist. Ranchi, Bi. —  $15.1 \times 11.7 \times 1.6$  cm (*Pl.* 75, 836). — Formerly E.A. Gait Coll., then Patna Mus. (2703), now University Mus. for Archaeology and Anthropology. — Unpub.
837. **Biru**, Dist. Ranchi, Bi. —  $19.4 \times 12.5 \times 1.3$  cm, 1415 gm (*Pl.* 75, 837). — S.C. Roy Coll. Ranchi (77). — Unpub.
838. **Chota Nagpur**, Bi. —  $22.0 \times 17.3 \times 2.6$  cm. 2700 gm, overall hammer patterning on both faces (*Pl.* 76, 838). — S.C. Roy Coll. Ranchi (58). — Unpub.
839. **Chota Nagpur**, Bi. —  $21.4 \times 17.1 \times 1.5$  cm, c. 2700 gm, overall hammer patterning on both faces (*Pl.* 76, 839). — S.C. Roy Coll. Ranchi (59). — Unpub.
840. **Chota Nagpur**, Bi. —  $22.9 \times 17.1 \times 1.5$  cm, c. 2600 gm, light green to whitish patina (*Pl.* 76, 840). — S.C. Roy Coll. Ranchi (60). — Unpub.
841. **Chota Nagpur**, Bi. —  $21.7 \times 16.5$  (pres.)  $\times 1.6$  cm, c. 2600 gm, front right corner anciently broken, heavy pitting on both faces and on edges (*Pl.* 76, 841). — S.C. Roy Coll. Ranchi (61). — Unpub.
842. **Chota Nagpur**, Bi. —  $20.9 \times 15.6 \times 1.5$  cm, 2200 gm (*Pl.* 76, 842). — S.C. Roy Coll. Ranchi (62). — Unpub.
843. **Chota Nagpur**, Bi. —  $19.1 \times 14.8$  cm, c. 2400 gm, 'dimple' on obverse left near butt (*Pl.* 76, 843). — S.C. Roy Coll. Ranchi (63). — Unpub.
844. **Chota Nagpur**, Bi. —  $21.2 \times 15.8 \times 1.5$  cm, c. 2500 gm, overall hammer patterning on obverse (*Pl.* 76, 844). — S.C. Roy Coll. Ranchi (64). — Unpub.
845. **Chota Nagpur**, Bi. —  $21.1 \times 16.9$  cm, c. 2600 gm, overall hammer patterning on obverse (*Pl.* 77, 845). — S.C. Roy Ranchi (65). — Unpub.
846. **Chota Nagpur**, Bi. —  $22.6 \times 17.5 \times 1.5$  cm, c. 2700 gm, overall hammer patterning on both faces (*Pl.* 77, 846). — S.C. Roy Coll. Ranchi (66). — Unpub.
847. **Chota Nagpur**, Bi. —  $19.1 \times 15.1 \times 1.3$  cm, 2100 gm (*Pl.* 77, 847). — S.C. Roy Coll. Ranchi (67). — Unpub.
848. **Chota Nagpur**, Bi. —  $19.0 \times 14.4 \times 1.7$  cm, 1895 gm, thickly encrusted with dirt (*Pl.* 77, 848). — S.C. Roy Coll. Ranchi (69). — Unpub.
849. **Chota Nagpur**, Bi. —  $19.9 \times 14.8 \times 1.3$  cm, 1760 gm (*Pl.* 77, 849). — S.C. Roy Coll. Ranchi (70). — Unpub.
850. **Chota Nagpur**, Bi. —  $18.1 \times 14.5 \times 1.2$  cm, 1305 gm, 'dimple' on obverse, black patina with surface accretions (*Pl.* 77, 850). — S.C. Roy Coll. Ranchi (71). — Unpub.
851. **Chota Nagpur**, Bi. —  $16.7 \times 13.8 \times 1.6$  cm, 1505 gm, heavy surface accretions (*Pl.* 77, 851). — S.C. Roy Coll. Ranchi (72). — Unpub.
852. **Chota Nagpur**, Bi. —  $19.1 \times 14.6 \times 1.5$  cm, 1960 gm (*Pl.* 77, 852). — S.C. Roy Coll. Ranchi (74). — Unpub.
853. **Chota Nagpur**, Bi. —  $18.4 \times 14.5 \times 2.0$  cm, c. 2300 gm (*Pl.* 77, 853). — S.C. Roy Coll. Ranchi (75). — Unpub.
854. **Chota Nagpur**, Bi. —  $16.7 \times 12.7 \times 1.2$  cm, 1295 gm, casting skin on reverse (*Pl.* 78, 854). — S.C. Roy Coll. Ranchi (76). — Unpub.
855. **Chota Nagpur**, Bi. —  $17.1 \times 14.3 \times 1.1$  cm, 1280 gm (*Pl.* 78, 855). — S.C. Roy Coll. Ranchi (78). — Unpub.
856. **Chota Nagpur**, Bi. —  $18.0$  (pres.)  $\times 13.7 \times 1.5$  cm, 1620 gm, front edge recently chipped (*Pl.* 78, 856). — S.C. Roy Coll. Ranchi (79). — Unpub.
857. **Chota Nagpur**, Bi. —  $19.0 \times 14.3 \times 1.6$  cm, 1690 gm, hammer marks visible on obverse, incusted with dirt (*Pl.* 78, 857). — S.C. Roy Coll. Ranchi (80). — Unpub.
858. **Chota Nagpur**, Bi. —  $14.8 \times 12.3 \times 1.3$  cm, 870 gm, well-formed, crisp edges, hammer marks visible on obverse, light green patina (*Pl.* 78, 858). — S.C. Roy Coll. Ranchi (89). — Unpub.
859. **Chota Nagpur**, Bi. —  $17.2 \times 13.7 \times 1.6$  cm, 1420 gm, light green patina (*Pl.* 78, 859). — S.C. Roy Coll. Ranchi (90). — Unpub.
860. **Chota Nagpur**, Bi. —  $17.1 \times 14.2$  (pres.)  $\times 1.6$  cm, 1980 gm, front right corner broken, rough surface (*Pl.* 78, 860). — S.C. Roy Coll. Ranchi (92). — Unpub.
861. **Chota Nagpur**, Bi. —  $17.9 \times 14.1$  (pres.)  $\times 1.9$  cm, 1730 gm, very roughly made, irregularly shaped, numerous bubbles visible in the surface, front left corner broken off (*Pl.* 78, 861). — S.C. Roy Coll. Ranchi (93). — Unpub.
862. **Chota Nagpur**, Bi. —  $14.4$  (pres.)  $\times 11.6 \times 1.1$  cm, 820 gm, roughly made, butt end recently broken off (*Pl.* 78, 862). — S.C. Roy Coll. Ranchi (94). — Unpub.
863. **Chota Nagpur**, Bi. —  $7.3$  (pres.)  $\times 9.8$  (pres.)  $\times 1.4$  cm, 530 gm, butt end preserved, recent break (*Pl.* 78, 863). — S.C. Roy Coll. Ranchi (96). — Unpub.
864. **Chota Nagpur**, Bi. —  $18.3 \times 15.9 \times 1.6$  cm, 1995 gm, thick green patina, incusted with dirt (*Pl.* 79, 864). — S.C. Roy Coll. Ranchi (97). — Unpub.
865. **Chota Nagpur**, Bi. —  $20.8 \times 14.5 \times 1.4$  cm, 1930 gm, 'dimple' on obverse near butt, ovoid hammerings overall on both faces, crisp edges, well preserved (*Pl.* 79, 865). — S.C. Roy Coll. Ranchi (98). — Unpub.
866. **Chota Nagpur**, Bi. —  $19.8 \times 13.0 \times 1.95$  cm, 1505 gm, numerous flaws and casting bubbles in the surface, rear left corner broken (*Pl.* 79, 866). — S.C. Roy Coll. Ranchi (99). — Unpub.
867. **Chota Nagpur**, Bi. —  $15.6 \times 12.0 \times 1.2$  cm, 1095 gm, numerous hammer marks on obverse (*Pl.* 79, 867). — S.C. Roy Coll. Ranchi (100). — Unpub.
868. **Chota Nagpur**, Bi. —  $19.1 \times 14.9 \times 2.4$  cm, 1915 gm, reverse very unevenly cast (*Pl.* 79, 868). — S.C. Roy Coll. Ranchi (102). — Unpub.
869. **Chota Nagpur**, Bi. —  $16.2 \times 13.8 \times 1.9$  cm, 1130 gm (*Pl.* 79, 869). — S.C. Roy Coll. Ranchi (103). — Unpub.



870. **Chota Nagpur**, Bi. —  $18.8 \times 16.5 \times 1.4$  cm, 2100 gm, 'dimple' on obverse centre left (*Pl. 79, 870*). — S.C. Roy Coll. Ranchi (104). — Unpub.
871. **Chota Nagpur**, Bi. —  $18.1 \times 15.0 \times 1.4$  cm, 1650 gm, badly corroded — particularly the butt, incrustated with dirt, thick green patina on obverse (*Pl. 79, 871*). — S.C. Roy Coll. Ranchi (105). — Unpub.
872. **Chota Nagpur**, Bi. —  $18.5 \times 14.8 \times 1.3$  cm, 1880 gm, 'dimple' on obverse at centre, casting skin on reverse (*Pl. 79, 872*). — S.C. Roy Coll. Ranchi (106). — Unpub.
873. **Chota Nagpur**, Bi. —  $15.8 \times 11.9 \times 1.5$  cm, 1095 gm, symmetrical and generally regular in shape (*Pl. 80, 873*). — S.C. Roy Coll. Ranchi (107). — Unpub.
874. **Chota Nagpur**, Bi. —  $19.2 \times 15.0 \times 1.9$  cm, 2150 gm (*Pl. 80, 874*). — S.C. Roy Coll. Ranchi (108). — Unpub.
875. **Chota Nagpur**, Bi. —  $19.5 \times 15.1 \times 1.5$  cm, 1620 gm (*Pl. 80, 875*). — S.C. Roy Coll. Ranchi (109). — Unpub.
876. **Chota Nagpur**, Bi. —  $20.6 \times 16.4 \times 1.9$  cm, c. 3000 gm, hammer marks visible on both faces (*Pl. 80, 876*). — S.C. Roy Coll. Ranchi (111). — Unpub.
877. **Chota Nagpur**, Bi. —  $16.3 \times 12.7 \times 1.2$  cm, 940 gm (*Pl. 80, 877*). — S.C. Roy Coll. Ranchi (112). — Unpub.
878. **Chota Nagpur**, Bi. —  $17.1 \times 13.9$  cm, 1360 gm (*Pl. 80, 878*). — S.C. Roy Coll. Ranchi (114). — Unpub.
879. **Chota Nagpur**, Bi. —  $17.7 \times 13.2 \times 1.3$  cm, 1260 gm (*Pl. 80, 879*). — S.C. Roy Coll. Ranchi (115). — Unpub.
880. **Chota Nagpur**, Bi. —  $16.1 \times 13.4$  (pres.)  $\times 1.5$  cm, 1405 gm, reverse very rough, front right corner broken, thick black oxidation (*Pl. 80, 880*). — S.C. Roy Coll. Ranchi (116). — Unpub.
881. **Chota Nagpur**, Bi. —  $14.0 \times 11.4 \times 1.3$  cm, 820 gm, oxidized black (*Pl. 80, 881*). — S.C. Roy Coll. Ranchi (117). — Unpub.
882. **Chota Nagpur**, Bi. —  $17.1 \times 13.1 \times 1.2$  cm, 1230 gm, front right corner recently broken (*Pl. 80, 882*). — S.C. Roy Coll. Ranchi (118). — Unpub.
883. **Chota Nagpur**, Bi. —  $15.7 \times 14.1 \times 1.2$  cm, 1005 gm (*Pl. 81, 883*). — S.C. Roy Coll. Ranchi (119). — Unpub.
884. **Chota Nagpur**, Bi. —  $14.5 \times 12.3 \times 1.2$  cm, 1030 gm, casting skin on reverse, distorted by recent hammering, particularly butt end corner right (*Pl. 81, 884*). — S.C. Roy Coll. (120). — Unpub.
885. **Chota Nagpur**, Bi. —  $15.6 \times 13.7 \times 1.7$  cm, 1300 gm (*Pl. 81, 885*). — S.C. Roy Coll. Ranchi (121). — Unpub.
886. **Chota Nagpur**, Bi. —  $16.8 \times 15.0 \times 1.5$  cm, 1370 gm, front edge recently chipped (*Pl. 81, 886*). — S.C. Roy Coll. Ranchi (122). — Unpub.
887. **Chota Nagpur**, Bi. —  $15.2 \times 14.7 \times 1.5$  cm, 1095 gm (*Pl. 81, 887*). — S.C. Roy Coll. Ranchi (123). — Unpub.
888. **Chota Nagpur**, Bi. —  $14.1 \times 11.9 \times 1.2$  cm, 875 gm (*Pl. 81, 888*). — S.C. Roy Coll. Ranchi (124). — Unpub.
889. **Chota Nagpur**, Bi. —  $17.6 \times 15.1 \times 1.8$  cm, 1950 gm, front edge recently chipped (*Pl. 81, 889*). — S.C. Roy Coll. Ranchi (126). — Unpub.
890. **Chota Nagpur**, Bi. —  $16.9 \times 12.9 \times 1.4$  cm, 1090 gm, both faces roughly formed, bubbles visible in reverse surface (*Pl. 81, 890*). — S.C. Roy Coll. Ranchi (128). — Unpub.
891. **Chota Nagpur**, Bi. —  $17.6 \times 13.5 \times 1.2$  cm, 1295 gm (*Pl. 81, 891*). — S.C. Roy Coll. Ranchi (129). — Unpub.
892. **Chota Nagpur**, Bi. —  $18.6 \times 14.1 \times 1.7$  cm, 1830 gm, large bubbles in reverse surface (*Pl. 82, 892*). — S.C. Roy Coll. Ranchi (130). — Unpub.
893. **Dist. Ranchi**, Bi. —  $16.3 \times 11.6 \times 1.4$  cm, 1015 gm, reverse very rough (*Pl. 82, 893*). — Formerly E.A. Gait Coll., now Patna Mus. (253). — Unpub.
894. **Dist. Ranchi**, Bi. —  $15.6 \times 12.9 \times 1.3$  cm, 1260 gm (*Pl. 82, 894*). — Formerly S.C. Roy Coll., now Patna Mus. (254). — Unpub.
895. **Dist. Ranchi**, Bi. —  $15.7 \times 12.6 \times 1.3$  cm, 1055 gm, numerous pin hole bubbles visible in surface, analysed (*Pl. 82, 895*). — Formerly E.A. Gait Coll., now Patna Mus. (255). — Unpub.
896. **Dist. Ranchi**, Bi. —  $16.6 \times 13.2 \times 1.1$  cm, 940 gm (*Pl. 82, 896*). — Formerly S.C. Roy Coll., now Patna Mus. (257). — Unpub.
897. **Dist. Ranchi**, Bi. —  $14.2 \times 10.9$  (pres.)  $\times 1.4$  cm, 780 gm, front right corner broken off (*Pl. 82, 897*). — Formerly S.C. Roy Coll., now Patna Mus. (1354). — Unpub.
898. **Dist. Ranchi**, Bi. —  $14.8 \times 10.9 \times 1.1$  cm, 750 gm, unusual surface contours resemble the impressions of folded cloth (*Pl. 82, 898*). — Donated by E.E. An-sourge, Patna Mus. (7532). — Unpub.
899. **Kamdara**, Dist. Ranchi, Bi. —  $17.5 \times 12.8 \times 1.6$  cm, 1650 gm (*Pl. 82, 899*). — S.C. Roy Coll. Ranchi (50). — Unpub.
900. **Kamdara**, Dist. Ranchi, Bi. —  $17.0 \times 13.3 \times 1.1$  cm, 1190 gm, 'dimple' on obverse lower right, whitish green patina (*Pl. 82, 900*). — S.C. Roy Coll. Ranchi (73). — Unpub.
901. **Kamdara**, Dist. Ranchi, Bi. —  $17.5 \times 13.5 \times 1.6$  cm, 1795 gm, green patina (*Pl. 82, 901*). — S.C. Roy Coll. Ranchi (101). — Unpub.
902. **Kera**, Dist. Singhbhum, Bi. —  $15.9 \times 13.9 \times 1.4$  cm, 830 gm, irregular in form and full of tiny bubbles (*Pl. 82, 902*). — Donated by F.N. Basu, Patna Mus. (260). — Gupta, P.L. 1980, 300, pl. 5.
903. **Mahuadanr**, Dist. Palamau, Bi. —  $14.9 \times 10.68 \times 1.0$  cm, 734 gm, surface corrosion, very dark patina, grainy surface (*Pl. 83, 903*). — St. Xavier's College History Dept. Ranchi (no no.). — Unpub.
904. **Mahuadanr**, Dist. Palamau, Bi. —  $14.6 \times 11.6 \times 1.12$  cm, 914 gm, grainy raw surface, blue

efflorescence, green patina (*Pl.* 83, 904). – St. Xavier's College History Dept. Ranchi (no no.) – Unpub.

905. **P.S. Bassia**, Dist. Ranchi, Bi. –  $14.7 \times 11.0$  (pres.)  $\times 1.1$  cm, 590 gm, front right corner broken off (*Pl.* 83, 905). – S.C. Roy Coll. Ranchi (48). – Unpub.

906. **P.S. Bassia**, Dist. Ranchi, Bi. –  $18.6 \times 14.4$  (pres.)  $\times 1.6$  cm, 1630 gm, obverse surface uneven, casting skin on reverse (*Pl.* 83, 906). – S.C. Roy Coll. Ranchi (49). – Unpub.

907. **P.S. Bassia**, Dist. Ranchi, Bi. –  $13.6 \times 12.3 \times 1.1$  cm, 870 gm, roughly made, hammer marks visible (*Pl.* 83, 907). – S.C. Roy Coll. Ranchi (95). – Unpub.

908. **P.S. Bassia**, Dist. Ranchi, Bi. –  $19.1 \times 14.1 \times 1.4$  cm, 1680 gm, numerous hammer marks on obverse (*Pl.* 83, 908). – S.C. Roy Coll. Ranchi (110). – Unpub.

909. **P.S. Bassia**, Dist. Ranchi, Bi. –  $13.5 \times 10.6 \times 1.2$  cm, 615 gm (*Pl.* 83, 909). – S.C. Roy Coll. Ranchi (125). – Unpub.

#### Type IV

In plan type IV axe-ingots show a convex cutting edge and slightly concave sides which converge toward the rounded butt. Thus, they superficially resemble type VII flat axes, which, however, are usually longer in their proportions. Type IV axe-ingots are rather irregular in their general outlines and in details of workmanship. Usually they are slightly planoconvex in profile and in cross section as well. The rough cast edges and faces are seldom smoothly formed. Most often the cutting edge is dull or rounded. Significantly, none of the examples shows any traces of wear. They differ from type III axe-ingots in that the edges are somewhat sharp and also in their general shape. Except for no. 910 from the Chota Nagpur area of Bihar, all of these artifacts came to light in the Gungeria hoard.

L range 12.6–16.5 cm

mean 14.95 cm

L/MW range 1.48–2.76:1

mean 2.12:1

Weight range 514–1250 gm

mean 872.3 gm

Examples: 11

910. **Chota Nagpur**, Bi. –  $14.8 \times 12.8 \times 1.3$  cm, 1250 gm, planoconvex in cross section, dull thick lead edge, rear left corner broken off, shiny dark green pati-

na (*Pl.* 83, 910). – S.C. Roy Coll. Ranchi (87). – Unpub.

#### Type V

The lead edges of these artifacts are in plan convex and straightish sides join them to the butt ends, the latter which generally have square corners. Profile views invariably reveal the edges to be somewhat planoconvex and rounded. In section, the faces are parallel to each other. Their surfaces are dull, rough and usually show a powdery light green patina. In several respects type V axe-ingots comprise an extremely homogeneous group. All of the examples were collected at the village Resgavaon in the Mathura district.

L range 18.0–24.3 cm

mean 18.59 cm

L/MW range 1.92–2.13:1

mean 2.03:1

Weight range 1605–2300 gm

mean 1860 gm

Examples: 12

## Type VI

Very irregular in appearance, these crudely fashioned objects were cast by pouring molten copper directly onto a flat surface. As a result, the shapes vary greatly. In plan, most are convex and broader at the front than at the butt. They are relatively thin and irregular in profile, sometimes as a result of imperfect casting. All of the examples bear the nominal provenance, Chota Nagpur, Bihar.

L range	9.7–11.9 cm
mean	10.97 cm
L/MW range	1.24–1.68:1
mean	1.41:1
Weight range	130–230 gm
mean	216 gm
Examples:	10

**911. Chota Nagpur, Bi.** –  $9.8 \times 7.2 \times 0.6$  cm, very irregularly formed (*Pl. 83, 911*). – S.C. Roy Coll. Ranchi (39). – Unpub.

**912. Chota Nagpur, Bi.** –  $11.9 \times 9.0 \times 0.6$  cm, 200 gm, very rough (*Pl. 83, 912*). – S.C. Roy Coll. Ranchi (40). – Unpub.

**913. Chota Nagpur, Bi.** –  $10.8 \times 9.1 \times 0.6$  cm, 200 gm, relatively well-formed (*Pl. 83, 913*). – S.C. Roy Coll. Ranchi (41). – Unpub.

**914. Chota Nagpur, Bi.** –  $11.9 \times 7.4 \times 0.5$  cm, 185 gm, 'cutting edge' not filled out (*Pl. 83, 914*). – S.C. Roy Coll. Ranchi (42). – Unpub.

**915. Chota Nagpur, Bi.** –  $9.7 \times 6.6 \times 0.7$  cm, 130 gm (*Pl. 83, 915*). – S.C. Roy Coll. Ranchi (43). – Unpub.

**916. Chota Nagpur, Bi.** –  $10.3$  (pres.)  $\times 9.5 \times 0.7$  cm, 185 gm, butt end broken off (*Pl. 83, 916*). – S.C. Roy Coll. Ranchi (44). – Unpub.

**917. Chota Nagpur, Bi.** –  $10.8 \times 8.8 \times 0.6$  cm, 190 gm (*Pl. 83, 917*). – S.C. Roy Coll. Ranchi (45). – Unpub.

**918. Chota Nagpur, Bi.** –  $10.7 \times 8.8 \times 0.8$  cm, 185 gm (*Pl. 84, 918*). – S.C. Roy Coll. Ranchi (46). – Unpub.

**919. Chota Nagpur, Bi.** –  $11.8 \times 9.6 \times 0.6$  cm, 220 gm, incompletely cast, hammered on reverse (*Pl. 84, 919*). – S.C. Roy Coll. Ranchi (47). – Unpub.

**920. Chota Nagpur, Bi.** –  $11.4 \times 8.8 \times 0.5$  cm, 230 gm, heavily incrustated with dirt (*Pl. 84, 920*). – S.C. Roy Coll. Ranchi (85). – Unpub.

## Miscellaneous axe-ingots

Five miscellaneous axe-ingots derive from the mid to upper doab area, or immediately west of the Yamuna in Haryana.

**921. Hansi, Dist. Hissar, Har.** –  $22.3 \times 9.47 \times 1.96$  cm, c. 2550 gm, sharp edges, butt end flattened, dark green patina beneath dirt and surface accretions (*Pl. 84, 921*). – Kanya Gurukul Mus. Narela (35). – Unpub.

**922. Kamalpur, Dist. Hardoi, U.P.** –  $15.0 \times 10.4 \times 1.3$  cm, 1205 gm, slightly planoconvex in profile, rough hammered surface, butt end corner left

broken (*Pl. 84, 922*). – State Mus. Lucknow (0.47). – Shastri, H. 1915, 4 pl. 4, 4; Lal, B.B. 1951, 38A.

**923. Rewari, Dist. Mahendragarh, U.P.** –  $16.8 \times 9.4 \times 1.48$  cm, 1370 gm, tiny casting bubbles visible especially in the reverse surface, yellowish-red colour (*Pl. 84, 923*). – Kanya Gurukul Mus. Narela (138). – Unpub.

## BANGLES

Four types are distinguished here, notwithstanding the often irregular form or poor state of preservation of these objects which often hinders a certain determination of a particular type. Briefly, type I bangles are circular in plan, heavy, large and made from round rod. Type II bangles are ovoid when seen en face; the wire from which they are made is circular or ovoid in section. Somewhat similar in appearance are type III bangles, which in cross section are clearly profiled and flattened on one or two sides. Type IV bangles have overlapping cut off ends and are manufactured of a relatively thick materi-



al. The remaining bangles or groups thereof vary greatly in shape and size. Many are thin, irregularly shaped and indistinguishable owing to a poor state of preservation. Several lots, as found, were composed of mixed types bundled together.

### Type I

Heavy, large and ring-shaped, these bangles are made of thick stock which is circular in cross section. The ends may meet or a slight space may lie between them. The workmanship is very good. Type I bangles occur in an area to the immediate west of the doab and also at Kayatha and Pondi, both in Madhya Pradesh.

D range	6.5–10.4 cm
mean	8.96 cm
D of wire range	0.62–1.61 cm
mean	1.28 cm
Weight range	135–475 gm
mean	370 gm
Examples:	7

**924. Rewari**, Dist. Mahendragarh, Har. – 11 bangles (*Pl. 84, 924*). – Kanya Gurukul Mus. (259). – Unpub.

### Type II

Seen en face, type II bangles are ovoid and bilaterally symmetrical. They are fashioned from wire which is circular or ovoid in cross section. Their ends generally are spread out from each other. Generally the workmanship is good. These simple artifacts occur in practically all areas where finds of the second millennium are represented.

D range	6.4–9.4 cm
mean	7.52 cm
D of wire range	0.5–1.2 cm
mean	0.77 cm
Examples:	16

**925. Mitathal**, Dist. Bhiwani, Har. – D 8.2 cm, wire D 1.09 × 0.88 cm, 100 gm, irregular in section and broken (*Pl. 84, 925*). – Kanya Gurukul Mus. Narela (205). – Unpub.

**926. Rewari**, Dist. Mahendragarh, Har. – 14 bangles (*Pl. 84, 926*). – Kanya Gurukul Mus. Narela (258). – Unpub.

**927. Rewari**, Dist. Mahendragarh, Har. – 3 bangles (*Pl. 84, 927*). – Kanya Gurukul Mus. Narela (261). – Unpub.

**928. Rewari**, Dist. Mahendragarh, Har. – 15 bangles (*Pl. 84, 928*). – Kanya Gurukul Mus. Narela (262). – Unpub.

### Type III

Bangles which are made of wire which has been flattened and in cross section, is hemicircular, barrel, quadratic or diamond-shaped, comprise type III. Those which in section are barrel-shaped or rectangular have sturdy proportions, are very regular in form and are well-made. These bangles occur in practically all of the areas where metal finds of the second millennium are represented.

D range	5.4–6.7 cm
mean	6.08 cm
D of wire range	0.32–0.7 cm
mean	0.52 cm
Examples:	9, including variants.

*Type III variant bangles*

929. **Rewari**, Dist. Mahendragarh, Har. – 37 bangles (*Pl. 85, 929*). – Kanya Gurukul Mus. Narela (263). – Unpub.

*Type IV*

These bangles are fashioned of heavy rounded wire, the ends of which are cut off squarely and which overlap. They are well-made and often relatively large. In some cases the ends show chased ornament. Three examples derive from excavations in Maharashtra, the fourth came to light at Bargaon in the Saharanpur district.

D range	5.5–9.0 cm
mean	7.5 cm
D of wire range	0.7–1.5 cm
mean	0.99 cm
Examples:	4

*Miscellaneous and mixed lots of bangles*

Forty-seven bangles and lots thereof are mixed or do not belong to the four types described above. Their provenances are varied and range from West Bengal to Maharashtra.

930. **Pauli**, Dist. Jind, Har. – 7 bangles, mostly type III (*Pl. 85, 930*). – Kanya Gurukul Mus. Narela (210). – Unpub.
931. **Provenance unknown**. – D 4.8 × 4.7 cm, wire D 0.7 cm, ends overlap considerably (*Pl. 85, 931*). – Indian Mus. Calcutta (A 21385 10629). – Unpub.
932. **Rewari**, Dist. Mahendragarh, Har. – 14 bangles (*Pl. 85, 932*). – Kanya Gurukul Mus. Narela (260). – Unpub.
933. **Rewari**, Dist. Mahendragarh, Har. – 9 bangles (*Pl. 85, 933*). – Kanya Gurukul Mus. Narela (264). – Unpub.
934. **Rewari**, Dist. Mahendragarh, Har. – 12 bangles (*Pl. 86, 934*). – Kanya Gurukul Mus. Narela (265). – Unpub.
935. **Rewari**, Dist. Mahendragarh, Har. – 42 bangles (*Pl. 86, 935*). – Kanya Gurukul Mus. Narela (266). – Unpub.
936. **Rewari**, Dist. Mahendragarh, Har. – 16 bangles (*Pl. 86, 936*). – Kanya Gurukul Mus. Narela (267). – Unpub.
937. **Rewari**, Dist. Mahendragarh, Har. – 58 bangles (*Pl. 86, 937*). – Kanya Gurukul Mus. Narela (268). – Unpub.
938. **Rewari**, Dist. Mahendragarh, Har. – 13 bangles, 300 gm (*Pl. 86, 938*). – Kanya Gurukul Mus. Narela (274). – Unpub.
939. **Rewari**, Dist. Mahendragarh, Har. – 8 bangles, 140 gm (*Pl. 86, 939*). – Kanya Gurukul Mus. Narela (275). – Unpub.
940. **Rewari**, Dist. Mahendragarh, Har. – 9 bangles, 280 gm (*Pl. 86, 940*). – Kanya Gurukul Mus. Narela (276). – Unpub.
941. **Rewari**, Dist. Mahendragarh, Har. – 8 bangles, 170 gm (*Pl. 86, 941*). – Kanya Gurukul Mus. Narela (277). – Unpub.
942. **Rewari**, Dist. Mahendragarh, Har. – 8 bangles, 165 gm (*Pl. 86, 942*). – Kanya Gurukul Mus. Narela (278). – Unpub.
943. **Rewari**, Dist. Mahendragarh, Har. – 27 bangles, 740 gm (*Pl. 87, 943*). – Kanya Gurukul Mus. Narela (279). – Unpub.

944. **Rewari**, Dist. Mahendragarh, Har. – 25 bangles, 700 gm (*Pl. 87, 944*). – Kanya Gurukul Mus. Narela (280). – Unpub.
945. **Rewari**, Dist. Mahendragarh, Har. – 24 bangles, 1540 gm (*Pl. 87, 945*). – Kanya Gurukul Mus. Narela (281). – Unpub.
946. **Rewari**, Dist. Mahendragarh, Har. – 15 bangles, 340 gm (*Pl. 87, 946*). – Kanya Gurukul Mus. Narela (282). – Unpub.
947. **Rewari**, Dist. Mahendragarh, Har. – 9 bangles, 150 gm (*Pl. 87, 947*). – Kanya Gurukul Mus. Narela (283). – Unpub.
948. **Rewari**, Dist. Mahendragarh, Har. – 7 bangles, 120 gm (*Pl. 87, 948*). – Kanya Gurukul Mus. Narela (284). – Unpub.
949. **Rewari**, Dist. Mahendragarh, Har. – 7 fragmentary bangles, 40 gm (*Pl. 87, 949*). – Kanya Gurukul Mus. Narela (285). – Unpub.
950. **Rewari**, Dist. Mahendragarh, Har. – 6 bangles, 65 gm (*Pl. 87, 950*). – Kanya Gurukul Mus. Narela (286). – Unpub.
951. **Rewari**, Dist. Mahendragarh, Har. – 11 bangles, 220 gm (*Pl. 87, 951*). – Kanya Gurukul Mus. Narela (287). – Unpub.
952. **Rewari**, Dist. Mahendragarh, Har. – 16 bangles, 1055 gm (*Pl. 87, 952*). – Kanya Gurukul Mus. Narela (288). – Unpub.
953. **Rewari**, Dist. Mahendragarh, Har. – 16 bangles, 450 gm (*Pl. 87, 953*). – Kanya Gurukul Mus. Narela (289). – Unpub.
954. **Rewari**, Dist. Mahendragarh, Har. – 8 bangles, 275 gm (*Pl. 87, 954*). – Kanya Gurukul Mus. Narela (290). – Unpub.
955. **Rewari**, Dist. Mahendragarh, Har. – 14 bangles, 560 gm (*Pl. 87, 955*). – Kanya Gurukul Mus. Narela (291). – Unpub.
956. **Rewari**, Dist. Mahendragarh, Har. – 6 bangles, 620 gm (*Pl. 87, 956*). – Kanya Gurukul Mus. Narela (292). – Unpub.
957. **Rewari**, Dist. Mahendragarh, Har. – 4 bangles, 420 gm (*Pl. 87, 957*). – Kanya Gurukul Mus. Narela (293). – Unpub.

## BARS

The term bar designates a long implement, the sides of which usually taper slightly toward one end. In profile the front end is usually chisel shaped (exception: no. 960). The shaft is essentially rectangular in section. None of the examples shows any trace of wear, but several have corroded surfaces. No. 962 is decorated with a series of symmetrically arranged circular indentations. Bars occur in the upper doab and to the immediate west; examples are also known from Parihati in Midnapur and from Kurada in Dist. Nagaur.

L range	19.5–46.2 cm
Mean dimensions	35.04 × 3.01 × 1.31 cm
Weight range	350–1400 gm
mean	933 gm
Examples:	11

958. **Hansi**, Dist. Hissar, Har. – 46.2 × 3.66 × 1.32 cm, 1400 gm, chisel end, warped, surface spalling (*Pl. 88, 958*). – Kanya Gurukul Mus. Narela (36). – Unpub.
959. **Hansi**, Dist. Hissar, Har. – 42.3 × 3.49 × 1.24 cm, 1230 gm, flat butt end, lead edge damaged, surface spalling (*Pl. 88, 959*). – Kanya Gurukul Mus. Narela (46). – Unpub.
960. **Hansi**, Dist. Hissar, Har. – 42.5 × 3.73 × 1.23 cm, 1365 gm, cutting edge broken off, surface spalling (*Pl. 88, 960*). – Kanya Gurukul Mus. Narela (47). – Unpub.
961. **Hansi**, Dist. Hissar, Har. – 38.0 × 4.1 × 1.1 cm, 1130 gm, chisel end, surface accretions (*Pl. 88, 961*). – Kanya Gurukul Mus. Narela (48). – Unpub.
962. **Rewari**, Dist. Mahendragarh, Har. – 31.3 × 3.0 × 1.08 cm, 555 gm, one end flattened through hammering, one face decorated with two groups of aligned indentations, dark green patina (*Pl. 88, 962*). – Kanya Gurukul Mus. Narela (14). – Unpub.

## BAR CELTS

In plan bar celts are long with slender proportions, and show a more or less broadened and convex lead edge, which is lacking in the case of bars. The shaft tapers in the direction of the butt end. In profile, bar celts are slightly planoconvex at the ends; they are thin (av. 0.6 cm), although examples up to 1.13 cm in thickness are known. In the case of thin examples, the lead edge is usually sharp and the butt ends of nearly all are dull. Bar celts are rectangular in cross section, sometimes with the upper surface slightly or pronouncedly convex. In some cases the two upper edges show decorative hammer dents, of the same size, which run practically the entire length. In two other cases the upper surfaces show irregularly spaced hammer marks. The surfaces of bar celts are usually grainy. All but one are from the Gungeria hoard; the singleton comes from the Chota Nagpur area.

L range	30.3–60.8 cm
Mean dimensions	51.24 × 7.54 × 1.25 cm
Weight range	832–2943 gm
mean	1441 gm
Examples:	19

963. **Hami**, Dist. Palamau, Bi. – 49.2 × 4.5 × 1.0 cm, end (*Pl.* 88, 963). – Formerly E.A. Gait Coll., now Patna Mus. (235). – Unpub.

## BAR CELT-INGOTS

In size and proportion these objects resemble bar celts but differ in that in plan the cutting edge is not as broadly splayed. In addition, rough cast, they have no sharp edges or corners. In cross section they are highly planoconvex or are bell-shaped. Almost invariably the broad reverse surface is concave and may show casting skin and the left edge forms a less acute angle at the base than the right one. The surfaces of all of the examples are rough, at least in part owing to corrosion. On the back of several pieces one or two perpendicular lines are cut, apparently recently. Important findspots include Bhaktabundh, Hami, Harra Chowra Darh and Kamdara. But most bear the nominal provenance, Chota Nagpur, Bihar.

L range	35.5–58.8 cm
Mean dimensions	45.91 × 5.77 × 2.26 cm
Weight range	1710–c. 3100 gm
mean	2100 gm
Examples:	59, including a variant.

964. **Chota Nagpur**, Bi. – 57.7 × 5.0 × 1.7 cm, c. 3000 gm, hammer marks visible on the obverse (*Pl.* 88, 964). – S.C. Roy Coll. Ranchi (1). – Unpub.

965. **Chota Nagpur**, Bi. – 48.0 (pres.) × 7.4 × 3.1 cm, c. 3000 gm, butt end broken off (*Pl.* 89, 965). – S.C. Roy Coll. Ranchi (2). – Unpub.

966. **Chota Nagpur**, Bi. – 44.7 × 5.0 × 2.5 cm, 1900 gm, recent cuts on the obverse (*Pl.* 89, 966). – S.C. Roy Coll. Ranchi (3). – Unpub.

967. **Chota Nagpur**, Bi. – 45.2 (pres.) × 6.5 × 2.1 cm, 2100 gm, butt end broken off (*Pl.* 89, 967). – S.C. Roy Coll. Ranchi (4). – Unpub.

968. **Chota Nagpur**, Bi. – 42.7 × 6.2 × 2.5 cm, 1860 gm (*Pl.* 89, 968). – S.C. Roy Coll. Ranchi (5). – Unpub.

969. **Chota Nagpur**, Bi. – 44.0 × 5.9 × 2.3 cm, 2060 gm (*Pl.* 89, 969). – S.C. Roy Coll. Ranchi (6). – Unpub.

970. **Chota Nagpur**, Bi. – 43.2 × 5.7 × 2.4 cm, 1710 gm (*Pl.* 89, 970). – S.C. Roy Coll. Ranchi (7). – Unpub.

971. **Chota Nagpur**, Bi. – 40.3 (pres.) × 4.8 × 2.3 cm, 1715 gm, butt end broken off (*Pl.* 89, 971). – S.C. Roy Coll. Ranchi (8). – Unpub.

972. **Chota Nagpur**, Bi. – 39.6 × 5.5 cm, 1380 gm (*Pl.* 89, 972). – S.C. Roy Coll. Ranchi (11). – Unpub.

973. **Chota Nagpur**, Bi. — 35.5 × 5.7 cm, 1420 gm (*Pl.* 90, 973). — S.C. Roy Coll. Ranchi (12). — Unpub.
974. **Chota Nagpur**, Bi. — 34.5 (pres.) × 5.4 cm, 1505 gm, butt end recently broken off (*Pl.* 90, 974). — S.C. Roy Coll. Ranchi (13). — Unpub.
975. **Chota Nagpur**, Bi. — 33.0 (pres.) × 5.8 × 2.4 cm, 1800 gm, obverse notched anciently (?) perpendicular to the length, butt end broken off (*Pl.* 90, 975). — S.C. Roy Coll. Ranchi (14). — Unpub.
976. **Chota Nagpur**, Bi. — 28.0 (pres.) × 3.6 × 1.4 cm, front end broken off (*Pl.* 90, 976). — S.C. Roy Coll. Ranchi (15). — Unpub.
977. **Chota Nagpur**, Bi. — 22.6 (pres.) × 4.8 (pres.) × 2.3 cm, middle fragment (*Pl.* 90, 977). — S.C. Roy Coll. Ranchi (16). — Unpub.
978. **Chota Nagpur**, Bi. — 18.9 (pres.) × 4.4 (pres.) × 1.5 cm, two parallel notches cut perpendicular to the length on the obverse, middle fragment (*Pl.* 90, 978). — S.C. Roy Coll. Ranchi (17). — Unpub.
979. **Chota Nagpur**, Bi. — 13.3 (pres.) × 6.4 × 2.7 cm, front end preserved (*Pl.* 90, 979). — S.C. Roy Coll. Ranchi (18). — Unpub.
980. **Chota Nagpur**, Bi. — 11.4 (pres.) × 7.0 × 2.1 cm, front end preserved (*Pl.* 90, 980). — S.C. Roy Coll. Ranchi (19). — Unpub.
981. **Chota Nagpur**, Bi. — 13.1 (pres.) × 3.5 (pres.) × 2.6 cm, butt end preserved (*Pl.* 90, 981). — S.C. Roy Coll. Ranchi (20). — Unpub.
982. **Chota Nagpur**, Bi. — 11.3 (pres.) × 3.8 (pres.) × 3.3 cm, middle fragment, old breaks (?) (*Pl.* 90, 982). — S.C. Roy Coll. Ranchi (21). — Unpub.
983. **Chota Nagpur**, Bi. — 9.4 (pres.) × 5.8 (pres.) × 2.3 cm, front end preserved (*Pl.* 90, 983). — S.C. Roy Coll. Ranchi (23). — Unpub.
984. **Chota Nagpur**, Bi. — 10.5 (pres.) × 3.1 (pres.) × 1.9 cm, butt end preserved (*Pl.* 90, 984). — S.C. Roy Coll. Ranchi (24). — Unpub.
985. **Chota Nagpur**, Bi. — 10.0 (pres.) × 4.8 × 1.6 cm, front end preserved (*Pl.* 90, 985). — S.C. Roy Coll. Ranchi (25). — Unpub.
986. **Chota Nagpur**, Bi. — 9.6 (pres.) × 3.7 (pres.) × 2.2 cm, middle fragment (*Pl.* 90, 986). — S.C. Roy Coll. Ranchi (26). — Unpub.
987. **Chota Nagpur**, Bi. — 8.8 (pres.) × 3.3 (pres.) × 2.5 cm, middle fragment (*Pl.* 90, 987). — S.C. Roy Coll. Ranchi (27). — Unpub.
988. **Chota Nagpur**, Bi. — 9.6 (pres.) × 3.2 (pres.) × 2.1 cm, middle fragment (*Pl.* 90, 988). — S.C. Roy Coll. Ranchi (28). — Unpub.
989. **Chota Nagpur**, Bi. — 6.2 (pres.) × 3.1 (pres.) × 2.3 cm, middle fragment (*Pl.* 90, 989). — S.C. Roy Coll. Ranchi (29). — Unpub.
990. **Chota Nagpur**, Bi. — 12.1 (pres.) × 3.9 (pres.) × 2.1 cm, middle fragment (*Pl.* 90, 990). — S.C. Roy Coll. Ranchi (30). — Unpub.
991. **Chota Nagpur**, Bi. — 9.5 (pres.) × 3.3 (pres.) × 3.0 cm, middle fragment (*Pl.* 90, 991). — S.C. Roy Coll. Ranchi (31). — Unpub.
992. **Chota Nagpur**, Bi. — 8.6 (pres.) × 2.8 (pres.) × 2.0 cm, butt end preserved (*Pl.* 90, 992). — S.C. Roy Coll. Ranchi (32). — Unpub.
993. **Chota Nagpur**, Bi. — 7.5 (pres.) × 3.8 (pres.) × 2.4 cm, middle fragment (*Pl.* 90, 993). — S.C. Roy Coll. Ranchi (33). — Unpub.
994. **Chota Nagpur**, Bi. — 5.8 (pres.) × 4.0 (pres.) × 2.5 cm, middle fragment (*Pl.* 90, 994). — S.C. Roy Coll. Ranchi (34). — Unpub.
995. **Chota Nagpur**, Bi. — 9.9 (pres.) × 3.6 (pres.) × 2.0 cm, butt end fragment (*Pl.* 90, 995). — S.C. Roy Coll. Ranchi (35). — Unpub.
996. **Chota Nagpur**, Bi. — 5.5 (pres.) × 4.1 (pres.) × 2.6 cm, middle fragment, obverse notched perpendicular to the length (*Pl.* 90, 996). — S.C. Roy Coll. Ranchi (36). — Unpub.
997. **Chota Nagpur**, Bi. — 12.7 (pres.) × 7.1 × 2.4 cm, front end preserved (*Pl.* 90, 997). — S.C. Roy Coll. Ranchi (37). — Unpub.
998. **Chota Nagpur**, Bi. — 7.6 (pres.) × 3.6 (pres.) × 2.7 cm, middle fragment (*Pl.* 90, 998). — S.C. Roy Coll. Ranchi (38). — Unpub.
999. **Chota Nagpur**, Bi. — 53.8 (pres.) × 4.5 × 2.6 cm, c. 3500 gm, front end anciently broken off (*Pl.* 91, 999). — S.C. Roy Coll. Ranchi (131). — Unpub.
1000. **Dist. Ranchi**, Bi. — 15.5 (pres.) × 10.4 × 1.6 cm, 980 gm, front end preserved (*Pl.* 91, 1000). — Formerly S.C. Roy Coll., now Patna Mus. (256). — Unpub.
1001. **Harra Chowra Darh**, Dist. Ranchi, Bi. — 40.7 × 4.8 cm, 1600 gm, butt end badly corroded and/or poorly cast (*Pl.* 91, 1001). — S.C. Roy Coll. Ranchi (9). — Unpub.
1002. **Kamdara**, Dist. Ranchi, Bi. — 39.7 × 5.8 cm, 1160 gm (*Pl.* 91, 1002). — S.C. Roy Coll. Ranchi (10). — Unpub.

## BUCRANIA AND DISCS

## Bucrania

These objects are unique to the Gungeria hoard. All are hammered from thin silver foil and two types are easily distinguishable:

## Type I

The thin sheet silver is cut in such a way as to suggest downward turned horns and a hanging hemispherical head-like form between them. These flat and wrinkled objects were originally slightly convex. An indented line runs along the perimeter of most examples and some show diagonal hatching between this border and the edge. In size and shape these objects form a homogeneous group.

L range                    12.2–14.2 cm  
 Mean dimensions     $13.32 \times 5.98 \times 0.02 \text{ cm}^{21}$   
 Examples:                8

## Type II

As opposed to type I bucrania, these are proportionately longer and the 'horns' are more broadly proportioned and lie closer to the 'head'. They generally are more wrinkled than type I examples and thus originally were more convexly formed. Running parallel to the perimeter, a fine impressed line appears. The edges, particularly of the 'horns', are sometimes damaged from being separated from each other and cleaned. In size and shape type II bucrania comprise a homogeneous group.

L range                    12.0–14.5 cm  
 Mean dimensions     $13.38 \times 10.81 \times 0.03 \text{ cm}$   
 Examples:                7

## Discs

Sheet silver discs, usually flattened and wrinkled, were originally convexly formed (H c. 1.5 cm). Like most type II bucrania, characteristic is an impressed line and diagonal hatching along the edge. One example shows three perforations on the edge. Another is fashioned with a series of dots along the margin. These discs are geometrically regular and in size form a homogeneous group.

D range                    11.75–13.6 cm  
 mean                    12.64 cm  
 Th mean                0.02 cm  
 Examples:                9

## CHISELS

The ten extant chisels are much smaller than bars and bar celts. Within this category great variations in shape are evident. For this reason no attempt has been made at a fine classification of the few existing examples.

<sup>21</sup> These objects are so thin that they cannot be measured accurately with a normal micrometre.

**1003. Bithur**, Dist. Kanpur, U.P. –  $14.5 \times 3.5 \times 1.2$  cm, 300 gm, two circular indentations on one face, butt splayed by hammering, dark green patina (*Pl. 91, 1003*). – State Mus. Lucknow (0.39 a). – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2.

**1004. Rewari**, Dist. Mahendragarh, Har. –  $26.0 \times 5.1 \times 1.2$  cm, 705 gm, recent break, butt splayed from recent hammering, S-shaped impressions decorate one face (*Pl. 91, 1004*). – Kanya Gurukul Mus. Narela (21). – Unpub.

**1005. Rewari**, Dist. Mahendragarh, Har. –  $25.7 \times 5.2 \times 1.17$  cm, 935 gm, tip bent, butt slightly

hammered, on one face eight circular indentations arranged in a symmetrical pattern near the butt, light green patina (*Pl. 91, 1005*). – Kanya Gurukul Mus. Narela (137). – Unpub.

**1006. Rewari**, Dist. Mahendragarh, Har. –  $7.2$  (pres.)  $\times 1.31 \times 1.01$  cm, 75 gm, old break (?), Harappan (?) (*Pl. 91, 1006*). – Kanya Gurukul Mus. Narela (199). – Unpub.

**1007. Rewari**, Dist. Mahendragarh, Har. –  $21.4 \times 1.4 \times 1.0$  cm, 240 gm, dark green patina, Harappan (?) (*Pl. 91, 1007*). – Kanya Gurukul Mus. Narela (201). – Unpub.

## FIGURINES

Sculptures in metal are represented chiefly by the four well-known figures from Daimabad. Of these, except for the fine-membered chariot, all are massive and very heavy. The only other contemporary metal sculpture is a pin-like object with a bovine hump and head which was acquired in Narangabad.

**1008. Narangabad**, Dist. Bhiwani, Har. – Cow-headed pin.  $14.3 \times 3.31$  cm, 140 gm (*Pl. 91, 1008*). – Kanya Gurukul Mus. Narela (273). – Unpub.

## HARPOONS

Harpoons, as the term is used here, are understood to be points of such a size as to be capable of killing large, probably aquatic animals; basic are retaining barbs and a means to make the head fast to a line in order to retrieve it with the game. We are not dealing simply with barbed spear or lance heads, for which a lug or an eyelet for the line is not necessary.

### Type I<sup>22</sup>

Type I harpoons are small with short bladed tips and four to six barbs on each side which are split from the shaft and splayed outward. Except for no. 342, with a retaining hook which branches off from the shank, all of the examples are fashioned with an eyelet on one side<sup>23</sup> behind the barbs. In section these harpoons are relatively thick and at the midpoint appear as lentoids which are truncated at both ends. In section the shanks are usually circular and the blade diamond-shaped. The shanks are slightly tapered. In size and shape, type I harpoons are relatively homogeneous. All of the examples came to light in the mid to upper doab area, usually immediately northeast of the Ganges.

L range	17.5–28.6 cm
Mean dimensions	$21.18 \times 4.62 \times 1.3$ cm
Weight range	215–915 gm
mean	459 gm
Examples:	8, including variants.

<sup>22</sup> Rau, W. 1974, 62–66: Type A; Lal, B. B. 1951: Type A.

<sup>23</sup> No. 1010 has eyelets on both sides.

- 1009. Bithur**, Dist. Kanpur, U.P. – C.  $20.1 \times 3.9 \times 1.1$  cm, 215 gm, rough surface green patina. – State Mus. Lucknow (A. 234) (*Pl. 92, 1009*). – Smith, V.A. 1905, 234 pl. 4, 3; Piggott, S. 1944, 178–179 fig. 3, 2; Gordon, D.H. 1950, 73 fig. 1, 16; Rau, W. 1974, 66 fig. 5, 2.
- 1010. Bithur**, Dist. Kanpur, U.P. – C.  $20.7 \times 4.5$  cm. – State Mus. Lucknow (not located 1983) (*Pl. 92, 1010*). – Smith, V.A. 1905, 234 pl. 4, 3; Piggott, S. 1944, 178–179 fig. 3, 1; Rau, W. 1974, 66 fig. 5, 1.
- 1011. Provenance unknown.** –  $17.5 \times 3.3 \times 1.5$  cm, 250 gm, fastening hole not bored through completely, smooth green patina (*Pl. 92, 1011*). – State Mus. Lucknow (81.18). – Unpub.
- 1012. Shahabad area**, Dist. Hardoi, U.P. – C.  $18.5 \times 4.2$  cm, two deep modern cuts on one side (*Pl. 92, 1012*). – National Mus. Delhi (67.138). – Anon. 1975, 81 pl. 55; Pant, G.N. 1978 pl. 5, 4.

### Type I variants

- 1013. Provenance unknown.** –  $38.4 \times 6.5 \times 1.9$  cm, casting seams run lengthwise on both faces and suggest casting in a two piece mould, workmanship only fair, thick green patina (*Pl. 92, 1013*). – State Mus. Lucknow (80.12). – Unpub.
- 1014. Provenance unknown.** –  $29.7 \times 4.7 \times 2.7$  cm, 915 gm, thick green patina (*Pl. 92, 1014*). – State Mus. Lucknow (81.17). – Unpub.

### Type II harpoons<sup>24</sup>

Type II harpoons differ from those of type I in form and are larger. They are cast with a medial rib which at the business end is formed into a bilateral blade. Barbs which are circular in section curve back as they issue from the middle area of the shaft. Near the shank an eyelet is cast to one side of the shaft on the opposite side of which a lug sometimes appears. Four to eight barbs are arranged bilaterally. The shank is slightly tapered. Although now battered and corroded, originally most must have been, technically and aesthetically speaking, of a very high quality. All of the examples derive from the mid to upper doab, often to the immediate northeast of the Ganges. Some examples also occurred near to the doab, to the west in Haryana.

L range	20.8–42.8 cm
Mean dimensions	$31.87 \times 6.34 \times 2.03$ cm
Weight range	360–945 gm
mean	700 gm
Examples:	23

- 1015. Bithur**, Dist. Kanpur, U.P. – C. 29.2 (pres.)  $\times 5.7$  cm, point broken off (*Pl. 92, 1015*). – Radhakrishna Temple on the Brahmavarta Ghat. – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915 pl. 1; Rau, W. 1974 foldout 2.
- 1016. Bithur**, Dist. Kanpur, U.P. – C.  $33.02 \times 8.57$  cm, 631.66 gm, “copper” (Shastri) (*Pl. 92, 1016*). – Purchased by Shastri 1911, present whereabouts unknown. – Shastri, H. 1915, 3 pl. 3, 2; Rau, W. 1974 foldout 1.
- 1017. Bithur**, Dist. Kanpur, U.P. –  $31.5 \times 5.5 \times 1.7$  cm, 545.7 gm (Anderson), “No tin. Traces of iron” (Anderson), badly corroded, large modern boring through the shank (*Pl. 92, 1017*). – Indian Mus. Calcutta (A 21570 Br 1). – Anon. 1822 third unpaginated page of Appendix III: (“Captain Presgrave. . . Copper Head of a Spear, found at Betoor.” No further information); Anderson, J. 1883, 395. 408; Smith, V.A. 1905, 234. 237; Brown, J. Coggin 1917, 142–143; Rau, W. 1974 foldout 1.
- 1018. Bithur**, Dist. Kanpur, U.P. –  $34.8 \times 6.5 \times 2.1$  cm (*Pl. 92, 1018*). – University Mus. of Archaeology and Anthropology, Cambridge (1930. 1612). – Shastri, H. 1915, 3 pl. 2, 4?
- 1019. Mitathal**, Dist. Bhiwani, Har. – 22.4 (pres.)  $\times 4.7$

<sup>24</sup> Rau, W. 1974, 62–66 foldouts 1 and 2.



(pres.)  $\times 2.0$  cm, 530 gm, fastening hole not entirely bored through, badly battered recently (*Pl.* 92, 1019). – Kanya Gurukul Mus. Narela (204). – Suraj Bhan 1972, 18, 19; idem. 1975, 4, 65 fig. 14 B.

**1020. Provenance unknown** (Baharia?). –  $33.8 \times 6.3 \times 2.1$  cm, 805 gm, surface accretions, corrosion in places, otherwise smooth surface,<sup>25</sup> tip sawn off (*Pl.* 93, 1020). – Kausambi Mus. Allahbad (TF-Cu-12). – Sharma, G.R. 1972, 42–43 pl. 2 A.

**1021. Provenance unknown.** –  $33.5 \times 6.0 \times 2.5$  cm, 868 gm (*Pl.* 93, 1021). – Horniman Mus. London. – Gordon, D.H. 1958, 137 pl. 27 a.

**1022. Provenance unknown.** –  $37.3 \times 6.0 \times 2.1$  cm, four indentations on one side nearest the two centre barbs; Cu 92.69%, Sn 5.35%, Pb 0.46%, Zn 0.005%, Fe 0.19%, Ni 0.07%, Ag 0.23%, An 0.03%, As 0.95%, Bi 0.025%, Co 0.005% (atomic absorption process) (*Pl.* 93, 1022). – Staatliche Museen Preußischer Kulturbesitz. Museum für Indische Kunst, Berlin (MIK I 5890). – Unpub.

**1023. Provenance unknown.** –  $33.5$  (pres.)  $\times 5.7 \times c. 2.2$  cm (*Pl.* 93, 1023). – S.Eilenberg Coll. London. – Unpub.

**1024. Provenance unknown** (secondary context on the Tweed river, Norham). –  $30.48 \times 5.71$  cm, Cu 91.12%, Sn 7.97%, Pb 0.77%, loss 0.14% (J.A. Smith) (*Pl.* 93, 1024). – Previously National Mus. of Antiquities of Scotland (BS 636), now Royal Scottish Mus. Edinburgh (1956.591). – Smith, J.A. 1871, 293, 300; Elliot, W. 1875, 695 fig. 2; Montelius, O. 1900, 134 fig. 330; Smith, V.A. 1905, 232, 238.

**1025. Rewari**, Dist. Mahendragarh, Har. –  $28.7 \times 5.98 \times 1.59$  cm, 380 gm, blade battered recently, burned (*Pl.* 93, 1025). – Kanya Gurukul Mus. Narela (30). – Unpub.

**1026. Shahabad area**, Dist. Hardoi, U.P. –  $37.0 \times 6.0$  cm, one barb broken off (*Pl.* 93, 1026). – National Mus. Delhi. – Gupta, S.P. 1965, 3 pl. 1, 2; Anon. 1975, 81 pl. 55; Pant, G.N. 1978 pl. 1; 5, 1.

**1027. Shahabad area**, Dist. Hardoi, U.P. – C.  $37.5 \times 6.8$  cm, one barb broken off (*Pl.* 93, 1027). – Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 60 pl. 5, 2.

### Type II a

Nos. 300, 1028 and 1029 differ from the preceding examples. They are cast with a short blade and a medial rib. Moreover, in plan they are thick and the barbs are more integrally cast with the shaft than is usual with type II harpoons.

**1028. Rewari**, Dist. Mahendragarh, Har. –  $32.9$  (pres.)  $\times 6.57 \times 2.21$  cm, 945 gm, surface accretions (*Pl.* 93, 1028). – Kanya Gurukul Mus. Narela (159). – Unpub.

**1029. Rewari**, Dist. Mahendragarh, Har. –  $20.8 \times 5.27 \times 2.05$  cm, 360 gm, blade battered (*Pl.* 94, 1029). – Kanya Gurukul Mus. Narela (160). – Unpub.

### Type II b

Nos. 1030 and 1031 are similar to other type II harpoons in size, shape and proportion. They differ, however, in that the barbs do not bend back toward the butt but rather branch off diagonally from the shaft.

**1030. Provenance unknown.** – C.  $36.8 \times 6.4$  (Smith) (*Pl.* 94, 1030). – National Mus. of Ireland (Art and Industrial Division), Dublin. – Smith, V.A. 1905, 243 pl. 7; Piggott, S. 1944, 170–179 fig. 3, 4; Gordon, D.H. 1950, 73 fig. 1, 18; Rau, W. 1974, 66 fig. 5.

**1031. Shahabad area**, Dist. Hardoi, U.P. –  $35.0 \times c. 6.95$  cm (*Pl.* 94, 1031). – National Mus. Delhi (65.256). – Gupta, S.P. 1965, 2 pl. 1, 1; Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 60 pl. 2; 5, 3.

<sup>25</sup> The dimensions given in the preliminary report are incorrect.

## Type III

Type III harpoons have no lance-like blade as do the preceding examples; instead, numerous barbs furcate from both edges of the shaft over the entire length. In section the shaft resembles essentially a truncated diamond and the shank is roughly rectangular. Instead of an eyelet in order to make fast the head, each harpoon shows a turned back hook near the butt, on one or both edges. The shank is not tapered, as with other harpoons. Also noteworthy is that the barbs are dull on their cutting edges. These weapons are large and are less carefully fashioned than type II harpoons. As a group, they are relatively homogeneous in shape and size. One example was acquired at Rewari in the Mahendragarh district and the others at Hansi in the Hissar district.

L range	36.8–44.3 cm
Mean dimensions	40.9 × 5.12 × 1.91 cm
Weight range	475–1 000 gm
mean	830.6 gm
Examples:	8

1032. **Hansi**, Dist. Hissar, Har. – 44.3 × 5.03 × 2.0 cm, 1 000 gm, surface badly corroded and spalted, some barbs bent or broken off (*Pl. 94, 1032*). – Kanya Gurukul Mus. Narela (39). – Unpub.

1033. **Hansi**, Dist. Hissar, Har. – 44.0 × 4.86 × 1.97 cm, 955 gm, some barbs broken off, copper-red colour (*Pl. 94, 1033*). – Kanya Gurukul Mus. Narela (40). – Unpub.

1034. **Hansi**, Dist. Hissar, Har. – 43.2 × 5.31 × 1.93 cm, 915 gm, one barb broken off and one hook on the shank bent back, copper-red colour (*Pl. 94, 1034*). – Kanya Gurukul Mus. Narela (41). – Unpub.

1035. **Hansi**, Dist. Hissar, Har. – 40.1 × 5.23 × 1.85 cm, 780 gm, severe surface corrosion and spalling toward the tip, copper-red colour (*Pl. 94, 1035*). – Kanya Gurukul Mus. Narela (42). – Unpub.

1036. **Hansi**, Dist. Hissar, Har. – 39.5 (pres.) × 4.64 × 1.9 cm, 790 gm, tip slightly blunted, surface spalling, copper-red colour (*Pl. 95, 1036*). – Kanya Gurukul Mus. Narela (43). – Unpub.

1037. **Hansi**, Dist. Hissar, Har. – 39.2 × 4.3 × 2.04 cm, 760 gm, some surface spalling (*Pl. 95, 1037*). – Kanya Gurukul Mus. Narela (44). – Unpub.

1038. **Hansi**, Dist. Hissar, Har. – 29.3 (pres.) × 4.54 × 1.5 cm, 475 gm, shank cut off recently, some barbs curled, dark green patina (*Pl. 95, 1038*). – Kanya Gurukul Mus. Narela (45). – Unpub.

1039. **Rewari**, Dist. Mahendragarh, Har. – 36.8 × 7.76 × 2.2 cm, 970 gm, one barb broken off, dark green patina (*Pl. 95, 1039*). – Kanya Gurukul Mus. Narela (29). – Unpub.

## Miscellaneous harpoons

1040. **Bendarkala**, Dist. Hardoi, U.P. – 31.7 × 9.6 × 2.4 cm, 885 gm, first two barbs broken off, second barb right is bent, surface intact, copper-red colour (*Pl. 95, 1040*). – State Mus. Lucknow (82.1). – Unpub.

1041. **Bithur**, Dist. Kanpur, U.P. – 36.8 × 5.1 cm,

1014.757 gm (Shastri), “copper” (analysed, Shastri), one barb broken off (*Pl. 95, 1041*). – Purchased by Shastri 1911, present whereabouts unknown. – Shastri, H. 1915, 3 pl. 3, 1; von Heine-Geldern, R. 1936, 102 fig. 37; Gordon, D.H. 1950, 73 fig. 1, 15; Rau, W. 1974 foldout 1.

## LANCE HEADS

In size and overall form, lance heads superficially resemble type III harpoons, but are without barbs. The blades have a medial ridge and usually concave edges. The hammered tang is roughly rectangular in section. In most cases a hook which curves backward was split off from the tang on one edge to fix the head to the pole. Two examples, however, from Sarthauli (nos. 343 and 347) lack this hook, which weakens their identification as lance heads. Most of the examples come from the mid to upper doab, often directly to the west of the Ganges.

L range	28.3–69.7 cm
Mean dimensions	45.89 × 6.65 × 1.24 cm
Weight range	170–1765 gm
mean	952.2 gm
Examples:	14

1042. **Dist. Etawah**, U.P. – 36.2 × 5.74 × 0.9 cm, hook corroded (*Pl.* 95, 1042). – British Mus. (1837. 12–14.52). – Worsaae, J. A. 1883, 188–189 fig. 3; Smith, V.A. 1905, 241; Read, C.H. 1920, 183. 184 fig. 195.

1043. **Provenance unknown**. –<sup>26</sup> 73.02 × 10.16 cm, Cu 95.68%, Sn 3.8% (Elliot) (*Pl.* 95, 1043). – Donated by

Sir Walter Elliot, 1874. – Previously National Mus. of Antiquities, Edinburgh (BS 634), now Royal Scottish Mus. Edinburgh (1956.589). – Elliot, W. 1874, 690–692 fig. 1; Montelius, O. 1900a, 906 fig. 329; Smith, V.A. 1905, 241 fig. on p. 241; Gupta, S.P. 1963, 149.

#### ORNAMENTS AND FINGER RINGS

Most of these seventeen miscellaneous objects are beads in various shapes, some massive, some hollow. The vast majority are made of copper, but the beads from Sanghol and Tekkalakota are of gold. Finger rings only are known from Brahmagiri and Ganeshwar. Ornaments and finger rings are represented almost exclusively in the excavations in Maharashtra and Madhya Pradesh.

#### SWORDS AND KNIVES

##### Swords

Long broad swords with an antenna hilt belong to type I. While II–IIc swords also show an antenna hilt, variations in the shapes of the blades make further subdivision necessary. Swords assigned to type III are all highly profiled in cross section, with distinctly concave edges. The remaining various swords, knives and fragments thereof are not readily classifiable.

##### Type I

Characteristically, type I swords have a long, broad, leaf-shaped blade, a large grip (some 6–10 cm in length) and an antenna hilt. In section the edges show a midrib and are slightly concave. The transition between the blade and the handle is gradual and in section the grip is rectangular with some being bi-convex. The surfaces in some cases show tiny casting bubbles. None of the pieces, with the possible exception of certain variants, show clear traces of ancient wear or ancient damage. Reportedly most come from the mid doab area.

L range	56.9–76.6 cm
Mean dimensions	69.6 × 7.42 × 1.16 cm
Weight range	1238–2380 gm
mean	1547.3 gm
Examples:	9, including variants.

<sup>26</sup> "... no definite indication of locality ... perhaps from ... Doab ... and perhaps Fathgarh." Gupta, S.P. 1963, 149.

1044. **Provenance unknown.** —  $76.6 \times 7.9$  (blade)  $\times 1.3$  (grip) cm, well-preserved (*Pl. 96, 1044*). — British Mus. (1915.2-16.1). — Gordon, D.H. 1958, 136 pl. 27b. (pres.)  $\times 5.9 \times 0.76$  cm, three fragments bent and broken, hilt missing (*Pl. 96, 1045*). — National Mus. Delhi (75.152). — Agrawal, D.P. et al. 1974, 18 (?).
1045. **Shahabad area.** Dist. Hardoi, U.P. — 56.9

### Type I variants

1046. **Rewari,** Dist. Mahendragarh, Har. — 41.9 (pres.)  $\times 4.0$  (pres.)  $\times 0.6$  (blade) cm, 300 gm, four fragments, tang broken off, edges curled, copper-red colour (*Pl. 96, 1046*). — Kanya Gurukul Mus. Narela (191). — Unpub.
1047. **Rewari,** Dist. Mahendragarh, Har. — 37.7 (pres.)  $\times 3.23$  (pres.)  $\times 0.59$  cm, 300 gm, three fragments, tang broken off, edges curled (*Pl. 96, 1047*). — Kanya Gurukul Mus. Narela (192). — Unpub.
1048. **Rewari,** Dist. Mahendragarh, Har. — 28.4 (pres.)  $\times 3.9$  (pres.)  $\times 0.7$  cm, 250 gm, three fragments, grip broken off recently (*Pl. 96, 1048*). — Kanya Gurukul Mus. Narela (193). — Unpub.

### Type II

The three extant type II swords all have a broad short blade with a distinct centre rib. In plan blades of this type are in the shape of an elongated leaf. The transition between the blade and grip is gradual and the grip itself is short (some 4 cm). The butt is formed by two prominent diagonally bifurcating antennae. In cross section the blade is biconvex with thin edges. The antennae are circular in section. Nos. 1049 and 1051 have a smooth surface with superficial scratches which run the length of the blade. Two examples of this type are from the doab.

L range 40.5–47.8 cm  
 Mean dimensions 44.15  $\times$  5.1  $\times$  0.94 cm  
 Examples: 3

1049. **Bithur,** Dist. Kanpur, U.P. — 40.5  $\times$  5.5 (blade)  $\times$  0.92 cm, 458.87 gm (Shastri), chip from one of the edges (*Pl. 96, 1049*). — University Mus. of Archaeology and Anthropology, Cambridge (1930.1611). — Shastri, H. 1915, 3 pl. 2, 1; von Heine-Geldern, R. 1936, 102 fig. 34; Naik, A.V. 1943, 376–378 fig. 8; Gordon, D.H. 1950, 73, fig. 1, 6.
1050. **Dist. Moradabad,** (Chandausi) U.P. — 38.5  $\times$  9.3  $\times$  0.63 cm, 295 gm, mediocre workmanship burnt, edges battered, corroded, pitted (*Pl. 97, 1050*). — Municipal Mus. Allahabad (no no.). — Ghosh, A. 1965, 72.<sup>27</sup>
1051. **Provenance unknown.** — 47.8  $\times$  4.7 (blade)  $\times$  0.98 cm, polished surface, some scoring running lengthwise, minor damage to edges (*Pl. 97, 1051*). — British Mus. (1961.10-19.1). — Unpub.

### Type IIa

Characteristic is a medial rib and a small bifurcating antenna-hilt. These swords have slender delicate proportions and are well-made. All three came to light at Kallur in the Raichur district of Karnataka.

L range 71.01–97.79 cm  
 Mean dimensions 81.53  $\times$  6.33  $\times$  0.83 cm  
 Examples: 3

<sup>27</sup> Although this sword has no inventory number, it is the

only one in the Allahabad Museum which Ghosh can have referred to. P.L. Gupta 1980, 312: "Chandausi".

**1052. Kallur**, Dist. Raichur, Kar. Strayfind. –  $96.0 \times 6.0$  (blade)  $\times 1.0$  cm (*Pl.* 97, 1052). – State Mus. Hyderabad. – Anon. 1942, 22–24 pl. 5b; Naik, A.V. 1943, 376–378 fig. 1; Gordon, D.H. 1950, 73 fig. 1, 11; Allchin, F.R. 1979, 113; Agrawal, D.P. 1982, 208; Allchin, B./F.R. Allchin 1982, 281. 288 fig. 10, 21.

**1053. Kallur**, Dist. Raichur, Kar. Strayfind. –  $67.0 \times 5.0$  (blade)  $\times 0.75$  cm, 9.5% Sn (Wheeler) (*Pl.* 97, 1053). – State Mus. Hyderabad. – Anon. 1942, 22–24 pl. 5b; Naik, A.V. 1943, 376–378 fig. 3; Wheeler, R.E.M.

1959, 104; Allchin, F.R. 1979, 113; Agrawal, D.P. 1982, 208; Allchin, B./F.R. Allchin 1982, 281. 288 fig. 10, 21.

**1054. Kallur**, Dist. Raichur, Kar. Strayfind. –  $75.0 \times 5.0$  (blade)  $\times 0.75$  cm, prominent medial rib (*Pl.* 97, 1054). – State Mus. Hyderabad. – Anon. 1942, 22–24 pl. 5b; Naik, A.V. 1943, 376–378 fig. 2; Lal, B.B. 1951, 38A; Allchin, F.R. 1979, 113; Agrawal, D.P. 1982, 208; Allchin, B./F.R. Allchin 1982, 281. 288 fig. 10, 21.

### Type IIb

Typically these swords have a medial rib and a broadly furcated antenna hilt. The swords and knives of this subtype are somewhat heterogeneous in shape. The examples were acquired mostly in Gujarat but one reportedly came to light near Rewari in the Mahendragarh district of Haryana.

L range	30.5–55.6 cm
Mean dimensions	$43.2 \times 9.19 \times 0.7$ cm
Weight range	215–490 gm
mean	281 gm
Examples:	7

**1055. Dist. Mehsana**, Guj. –  $55.6 \times 10.3$  butt (pres.)  $\times 0.82$  cm, 395 gm, one antenna broken off, both edges badly chipped (*Pl.* 98, 1055). – National Mus. Delhi (70.60). – Anon. 1973, 72; Pant, G.N. 1978, 50–52 fig. 102; Allchin, F.R. 1979, 112–113.

**1056. Dist. Mehsana**, Guj. –  $32.4 \times 9.4$  butt (pres.)  $\times 0.76$  cm, 215 gm, edges spalted, chipped (anciently?), one antenna broken, Sn 8–9% (*Pl.* 98, 1056). – National Mus. Delhi (70.62). – Anon. 1973, 72; Pant, G.N. 1978, 50–52 fig. 102; Allchin, F.R. 1979, 112–113.

**1057. Dist. Mehsana**, Guj. –  $53.5 \times 13.2$  butt (pres.)  $\times 0.8$  cm, 490 gm, edges corroded, chipped recently (*Pl.* 98, 1057). – National Mus. Delhi (70.63). – Anon. 1973, 72; Pant, G.N. 1978, 50–52 fig. 102; Allchin, F.R. 1979, 112–113.

**1058. Provenance unknown.** –<sup>28</sup>  $42.7 \times 4.0$  (blade)

$\times 0.7$  cm, 374 gm (Anderson), one antenna broken, large hole bored for analysis, "... traces of lead and silver. No tin." (*Pl.* 98, 1058). – Indian Mus. Calcutta (21564 Lu 1). – Anderson, J. 1883, 408. 488; Smith, V.A. 1905, 232 n. 1 pl. 3, 2; Brown, J. Coggin 1917, 152; Marshall, J. 1922, 614 pl. 10, 18; von Heine-Geldern, R. 1936, 101–102 pl. 32; Naik, A.V. 1943, 376–378 fig. 7; Piggott, S. 1944, 180 fig. 4; Gordon, D.H. 1950, 73 fig. 1, 7; Lal, B.B. 1951, 35 fig. 7; idem. 1953, 92 fig. 5, 3; Gordon, D.H. 1958, 136 fig. 17, 3; Müller-Karpe, H. 1980 pl. 562 C; Agrawal, D.P. 1982, 204 fig. 119, 1.

**1059. Rewari**, Dist. Mahendragarh, Har. –  $41.7 \times 2.65$  (blade)  $\times 0.51$  cm, 240 gm, medial rib, slightly bent out of shape, light green patina (*Pl.* 98, 1059). – Kanya Gurukul Mus. Narela (27). – Unpub.

### Type IIb variants

**1060. Dist. Mehsana**, Guj. –  $46.5 \times 9.3$  (butt)  $\times 0.62$  cm, 250 gm, finely made, ends of antenna sharp, edges mostly broken off (*Pl.* 98, 1060). – National Mus. Delhi (70.61). – Anon. 1973, 72; Pant, G.N. 1978, 100–102 fig. 102; Allchin, F.R. 1979, 112–113.

**1061. Kankasa**, Dist. Junagadh, Guj. –  $30.5 \times 9.6$  (butt) cm (*Pl.* 99, 1061). – Present whereabouts unknown. – Sankalia, H.D. 1980, 163.

<sup>28</sup> "Locality unknown" Anderson, J. 1883, 488. "... prob-

ably included in the Fathegarh find." Smith, V.A. 1905, 232 n. 1. Smith bases his conclusions on typological grounds.

## Type III

In plan these short swords appear leaf-shaped and in cross section have a sharply profiled medial ridge and highly concave sides. As a group they show some degree of morphological heterogeneity and vary in details of construction. No. 1064 has an antenna butt and no. 1062 a hook in the middle of the grip which bends backward. The grips of nos. 1062 and 1063 differ from the others of this type in that they are each pierced twice in order to fasten the grip. All type III swords are similar in size. Examples are known from Dist. Hissar in Haryana and Dist. Hardoi in Uttar Pradesh.

L range	43.6–47.0 cm
Mean dimensions	45.47 × 6.56 × 2.64 cm
Examples:	4

**1062. Hansi**, Dist. Hissar, Har. – 44.3 × 7.19 × 1.88 cm, 900 gm, surface incrustations (*Pl. 99, 1062*). – Kanya Gurukul Mus. Narela (37). – Unpub.

**1063. Hansi**, Dist. Hissar, Har. – 43.6 × 6.16 × 3.4 cm, 1365 gm, surface originally polished, butt hammered (*Pl. 99, 1063*). – Kanya Gurukul Mus. Narela (38). – Unpub.

**1064. Shahabad area**, Dist. Hardoi, U.P. – 47.0 (pres.) × c. 5.11 (pres.) cm, tip of blade bent over, one

antenna broken off, the other antenna bent back, edges curled (*Pl. 99, 1064*). – National Mus. Delhi (1966.28). – Gupta, S.P. 1965, 3–5 pl. 1, 3; Anon. 1975, 81 pl. 55; Pant, G.N. 1978, 52–53 fig. 143 pls. 3; 5, 11.

**1065. Shahabad area**, Dist. Hardoi, U.P. – C. 25.0 × 4.0 × c. 1.5 cm, tip bent over, front part preserved (*Pl. 99, 1065*). – National Mus. Delhi. – Anon. 1975, 81 pl. 55; Pant, G.N. 1978 pl. 5, 10.

## Miscellaneous Swords, Knives, Fragments thereof and a Piercer

Thirty-seven swords and knives as well as fragments thereof are not readily classifiable. They derive from various sites mostly from northern India.

**1066. Moongalaar Tea Estate**, Dist. Idukki, Ker. – 70.0 × 2.8 (blade) × 0.5 cm, Cu 98%, As 3.2% (Allchin), surface corroded, one antenna broken off and repaired (recently?) (*Pl. 99, 1066*). – University Mus. of Archaeology and Anthropology, Cambridge (Z 15996). – Allchin, F.R. 1979, 106–118 figs. 2, 3.

**1067. Narangabad**, Dist. Bhiwani, Har. – 22.6 × 2.08 × 0.1 cm, c. 10 gm (*Pl. 99, 1067*). – Kanya Gurukul Mus. Narela (272). – Unpub.

**1068. Rewari**, Dist. Mahendragarh, Har. – 34.2 (pres.) × 4.6 × 0.62 cm, 305 gm, roughly formed, numerous hammer marks, tip broken off, concave edges, two holes bored through the grip, yellowish colour, ancient (?) (*Pl. 99, 1068*). – Kanya Gurukul Mus. Narela (28). – Unpub.

**1069. Rewari**, Dist. Mahendragarh, Har. – 33.9 × 1.5 × 1.5 cm, 500 gm, dark green patina, ancient (?) (*Pl. 99, 1069*). – Kanya Gurukul Mus. Narela (161). – Unpub.

**1070. Rewari**, Dist. Mahendragarh, Har. – 41.8 (pres.) × 2.9 (pres.) × 0.96 cm, 370 gm, four fragments, edges curled, modern damage (*Pl. 100, 1070*). – Kanya Gurukul Mus. Narela (190). – Unpub.

**1071. Rewari**, Dist. Mahendragarh, Har. – 19.7

(pres.) × 3.0 × 0.58 cm, 115 gm, concave edges, two fragments, tip broken off, edges curled, modern damage (*Pl. 100, 1071*). – Kanya Gurukul Mus. Narela (194). – Unpub.

**1072. Rewari**, Dist. Mahendragarh, Har. – 19.0 (pres.) × 3.07 (pres.) × 0.6 cm, 120 gm, two fragments, concave edges, modern damage (*Pl. 100, 1072*). – Kanya Gurukul Mus. Narela (195). – Unpub.

**1073. Rewari**, Dist. Mahendragarh, Har. – 19.7 (pres.) × 3.0 (pres.) × 0.68 cm, 125 gm, two fragments, edges slightly concave, break recent, copper-red colour (*Pl. 100, 1073*). – Kanya Gurukul Mus. Narela (196). – Unpub.

**1074. Rewari**, Dist. Mahendragarh, Har. – 6.2 (pres.) × 3.7 × 0.61 cm, 50 gm, blade fragment secondarily worked (anciently?), saw tooth edge, edges slightly concave, both ends hammered flat (*Pl. 100, 1074*). – Kanya Gurukul Mus. Narela (200). – Unpub.

**1075. Rewari**, Dist. Mahendragarh, Har. – 33.1 × 8.1 × 2.2 cm, 1000 gm, barbed blade with profiled grip, originally 3 barbs on each side, hook on the butt end, one barb broken off and the opposite one bent, incrustated with dirt, dark green patina (*Pl. 100, 1075*). – Kanya Gurukul Mus. Narela (270). – Unpub.

## VESSELS

Few metal vessels have come to light prior to the early historic period. Those that are bowls have raised from thin metal. Based on the published material at least four types are distinguishable: those with a plain rim, an example with a rolled rim, another with a carinated, everted and rolled rim, one with an everted carinated rim and with an open spout. All are well made. The sole examples deriving from archaeological contexts are nos. 9 and 89, respectively from a Neolithic/Chalcolithic and from a Jorwe context. Metal vessels also belong to the Kurada hoard (cf. nos. 206–208).

Examples: 5<sup>29</sup>

## VARIA

**1076. Bartoli**, Dist. Palamau, Bi. – Miniature stand. 17.2 × 14.2 × 7.4 cm, 1005 gm, cast in one piece, stands relatively flat, unevenly weathered surface, two holes corroded in surface (*Pl. 100, 1076*). – Donated by Rev. Vardar Ludey, Patna Mus. (802). – Roy, S.C. 1920, 403.

**1077. Bithur**, Dist. Kanpur, U.P. – Irregular clump of copper. 10.1 × 11.1 × 2.0 cm, 390 gm, very dark green patina (*Pl. 100, 1077*). – State Mus. Lucknow (0.35). – Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1–2.

**1078. Chota Nagpur**, Bi. – Cuboid with hammered surface. 7.6 × 4.9 × 2.3 cm, smooth unweathered surface, modern (?) (*Pl. 100, 1078*). – S.C. Roy Coll. Ranchi (22). – Unpub.

**1079. Kallur**, Dist. Raichur, Kar. – Fragments mostly of wire objects (*Pl. 100, 1079*). – State Mus. Hyderabad. – Anon. 1943, 22–24 pl. 12a; Agrawal, D.P. 1982, 208.

**1080A–C. Kosam** (Kausambi), Dist. Allahabad, U.P. – Miniature flat bladed points.

**A.** 5.04 × 3.96 × 0.53 cm, heavily corroded. **B.** 2.57 (pres.) × 2.06 (pres.) × 0.3 cm, heavily corroded.

**C.** 1.3 × 1.5 × 0.3 cm (*Pl. 100, 1080A–C*). – Kanya Gurukul Mus. Narela (211–213). – Unpub.

**1081. Nagar**, Dist. Jullundur, Punj. – Wire (hook?). L 9.9 cm, wire D 0.25 cm (*Pl. 100, 1081*). – Present whereabouts unknown. – Joshi, J.P. 1978, 100 pl. 20.

**1082. Rewari**, Dist. Mahendragarh, Har. – Scale pan (?). D 5.5 × 5.6 cm, H. 0.7 cm, Th 0.08 cm. Hammered from sheet copper. Harappan (?) (*Pl. 100, 1082*). – Kanya Gurukul Mus. Narela (179). – Unpub.

**1083. Rewari**, Dist. Mahendragarh, Har. – Oblong piece of cast copper, one end bent over (secondarily?). 9.1 × 2.31 × 0.64 cm, 90 gm, both ends battered, hook on same end as that bent over, pitted surface (*Pl. 100, 1083*). Kanya Gurukul Mus. Narela (249). – Unpub.

## Chronology uncertain

**Northern India.** This provenance was supplied by the curator B.V. Shetti. S.P. Gupta gives the provenance as Kosam, Dist. Allahabad. – Human-shaped pendant, bored through the head. 3.36 × 1.62 × 0.54 cm. – Prince of Wales Mus. Bombay (66.33). – Gupta, S.P. 1980, 77 pl. 36. 37.

**Northern India.** This provenance was supplied by the Curator B.V. Shetti. S.P. Gupta gives the provenance as Kosam, Dist. Allahabad. – Human figurine with undifferentiated features. 5.3 × 2.48 × 1.4 cm. – Prince of Wales Museum Bombay (66.32). – Gupta, S.P. 1980, 77 pl. 36e.

<sup>29</sup> Vessels are so few and so heterogeneous in shape, that at this stage of research a typology is premature.

## CONCLUSIONS

The geographical distribution of over 100 places or areas where protohistoric, non-Harappan Indian metal objects have been reported, and of the types themselves is somewhat random and does not reflect systematic research. For example, were it not for the antiquarian zeal of two individuals, S. C. Roy and Swami Omanand Saraswati, who actively collected Hoard objects in Bihar and in Haryana respectively, these artifacts would be for all practical purposes unknown outside the Ganges-Yamuna doab.<sup>1</sup> Likewise, the excavation activities carried out in the western part of India have put the study of prehistory in general on a sounder footing there, and per force that of the metal industry, than can be said for other parts of the subcontinent. Within the doab and even moreso to the south, for the period under consideration, despite considerable numbers of relevant artifacts, the metal industry remains inadequately known.

Only 26% of the material accessible for study derives from controlled excavations, mainly from settlements particularly in Maharashtra. Relatively few prehistoric burials are known in pre-Iron Age India and practically none contain metallic grave goods. The Neolithic burials at Brahmagiri and Terdal, as well as the third millennium remains from Bagor, to the northwest, represent the sole identifiable relevant objects.

The Copper Hoards *per se* are concentrated in the Ganges-Yamuna doab, eastern Chota Nagpur region, in southern Haryana-northern Rajasthan and at scattered sites in Madhya Pradesh. In the doab, but for a lance head and a harpoon from Saipai and except for the Gungeria hoard in Madhya Pradesh, no other metal objects derive from even casually recorded excavations. Many of the metal objects acquired without a formal provenance must have belonged to hoards, but *exactly* which artifacts belong to which hoard is unclear. In the doab and in Chota Nagpur the find situation is similar to that in Haryana.<sup>2</sup> At the most two doab hoards (Madnapur and Mainpuri) seem intact as found; they differ greatly from each other in the types represented. This also holds true for the three seemingly intact hoards (Dargama, Hami and Parihati) from the Chota Nagpur area. It is not possible to point out a single standard type of hoard.

As their name implies, some so-called *gangaghati* in fact occur buried in river banks, but others have been found far away from streams and it is by no means clear whether the hoards, for whatever reason, were deposited intentionally near water courses. Nor can they otherwise be regularly associated with a specific geographical find situation. Given the sedimentation in these often alluvial areas, an exact determination of ancient geomorphology is at best difficult and at worst impossible.

The distribution of certain artifact types, such as type II bangles, ranges, over one or more regions, but that of many types is limited and the objects of a particular site often are distinctive and recognizable as such. It is in fact possible to characterize the finds of the different regions of India despite the random selection available to us.

Easily distinguishable by the area of their origin are the objects of the Copper Hoards. In the Ganges-Yamuna doab, particularly numerous are axes of the IIIa, IVa and Va types, type II har-

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<sup>1</sup> Yule, P./M. Thiel-Horstmann (in press).

<sup>2</sup> To the south, the Pondi hoard also seems to have been found intact.



[illegible]

[illegible]

poons, lance heads and swords. Rarer but nonetheless characteristic are 'anthropomorphs' as well as type II and III bangles. The situation in northern Rajasthan and southern Haryana is somewhat different. In terms of the present state of research, southern Haryana is the better represented of the two, and shows a significant number of axes (types II, IIIa, IVa, IVb, IVc), type II bangles and bundles of miscellaneous, usually thin bangles, as well as bars and type III harpoons. The common forms which link the north with the south include type II double axes, certain type IVa and IVc axes as well as bars.

The repertoire of eastern Chota Nagpur differs radically from those of other regions where hoards occur. Typical of this area are type I double axes, rough axe-ingots and numerous bar celt-ingots. Totally lacking are such northern objects as harpoons; on the other hand, ingot-like implements occasionally do occur in the north.

In the uplands of Madhya Pradesh, fewer finds and sites are known and here the information is far more fragmentary. Madhya Pradesh was probably more sparsely settled in prehistory than the north and northeast. The type IIIa axe and type I bangles from Pondi are nominally related with such objects from the neighbouring doab, but at the same time, axe-ingots characteristic of the Chota Nagpur group have been reported in the vicinity (Dist. Rewa). 300 km to the south, the Gungeria hoard contained several unique types and typologically speaking, is an isolated phenomenon. Yet the presence of a bar celt at Hami and two type VII axes from Chota Nagpur – types otherwise unique to Gungeria – give some indication of contact with the northeast.

Other areas present an even more random selection of artifact types. To the west at Harappan Lothal in Gujarat the presence of a fragmentary imported type I anthropomorph suggests contact with the doab. Type I axes from here and Somnath may also indicate connections with distant Haryana, where they also are documented, but this type could as easily represent a local Harappan one. All in all, the Copper Hoards bear little resemblance to comparable metal objects from the neighbouring Harappa or other cultures.

The present state of research denies us a glimpse of any discernable development in the metal finds. A Neolithic metallic axe from Brahmagiri seems primitive in shape, and other Neolithic metal objects are rare relative to those of later periods, but little more than this can be said.<sup>3</sup> The unheralded appearance of the elaborate (Late Harappan?) metal sculptures from Daimabad, without known predecessors, exemplifies the lacunar state of knowledge with regard to the cultural manifestations of the age on the whole. Likewise, the unique III d and Va variant axes from Ahar and Navdatoli respectively, among other unusual types, show the great variety characteristic of the western material. Varied and utilitarian metal artifacts from excavated settlements also contrast sharply with the limited repertoire of the heavy Hoard objects. The limited base of evidence does not allow broad interpretative statements on the nature of the cultures involved.

The important site of Ganeshwar has yielded an impressive number of metal objects. To judge from brief find notices, it is not a Hoard site, but rather is a settlement. Some artifact types from here have parallels with Hoard objects from Haryana, but others, such as arrowheads and fishhooks, belong to the usual repertoire of settlement sites. The local Ganeshwar-Jodhpura pottery, which is unique, does little to illuminate the cultural connections of the associated metal finds. Notwithstanding the designation "OCP", which the first excavator of Ganeshwar, R.C. Agrawal, has used to describe it, there seems no way to connect the vessel shapes or decoration with those of the OCP of the doab. With the possible exception of certain type IIIc axes, the Ganeshwar metal objects differ greatly from the me-

<sup>3</sup> Within the framework of a general treatment of the find situation in northern India which I am preparing, I shall give the matter of chronology closer attention.

tallic Hoard objects from nearby Kurada, which complicates the picture of the local repertoire. The degree to which northern Rajasthan and southern Haryana represent a truly cohesive cultural region is a question which may prove a fertile area for further work.<sup>4</sup> At least it is clear that the metal objects from Ganeshwar are by and large free of direct influences from the doab and the Harappan Culture.

## METALLURGY

Numerous difficulties beset our understanding of the prehistoric metallurgy of India, not the least of which is that relatively few analyses exist which supply the necessary ancillary descriptive, stratigraphic and typological data. Particularly the 'wet' analyses made in the nineteenth century fail to express the constituent elements in percentages. Except for the atomic absorption spectrophotometric assays made by D. P. Agrawal and certain others, often the analytical method used is not specified, which may contribute uncertainty to the results. Further doubts result from cases in which different test figures from different scholars exist for the same piece.<sup>5</sup> Finally, many museum objects exist for which the analyses are unpublished; analyses also are published for which the respective museum objects cannot be identified with certainty.

The analyses themselves present a difficult and in some ways conflicting picture. Tin-bronze is documented at Neolithic Brahmagiri and several later non-Harappan sites such as Somnath, Daimabad and Navdatoli (see table). In contrast to this, tests of Copper Hoard implements carried out by D. P. Agrawal and his colleagues consistently show an absence of tin but the presence of arsenic.<sup>6</sup> A number of further analyses are published which indicate the existence of Hoard objects of pure copper and of tin-bronze as well (of unknown provenance, from Fathgarh, Mehsana et al.). If the bulk of the tools and weapons of the Copper Hoards consistently were made of copper at a time when a bronze technology existed, this could be taken as an indication of their non-functional use.<sup>7</sup> Copper is available locally in Rajasthan and Bihar, but tin is rare<sup>8</sup> and may have come from outside.

As we know from observations made of the objects themselves and from metallographic studies, the technology of Indian prehistoric metal objects is simpler than that of their often crude looking counterparts from the neighbouring Harappa Culture.<sup>9</sup> Distinct casting seams from two – part moulds are seldom visible<sup>10</sup> in the Hoard material but the use of these moulds still seems likely for flat axes and most other implements. This is shown by the bilateral symmetry of the objects when viewed in profile, for objects cast in open face moulds are flat or flatter on one face. Except for the Daimabad bronzes there is no evidence to assume the use of the more complex *cire perdue* method<sup>11</sup> and from the point of view of technique the use of two-piece moulds plausibly explains the technique of many of the objects studied.

<sup>4</sup> Cf. Allchin, B./F.R. Allchin 1982, 250–253.

<sup>5</sup> Cf. Agrawal, D. P. et al. 1978, 45 with the unpublished results of the chemist of the Archaeological Survey of India for the Daimabad bronzes which S.A. Sali kindly furnished me (supra 29.30). Positively expressed, this discrepancy is specific only to the Daimabad sculptures, but negatively seen, it could have implications for all other objects analysed. Cf. Organ, R. M. 1962, 48–54 on the problems of test variables.

<sup>6</sup> Agrawal, D. P. et al. 1978, 42.

<sup>7</sup> This point, which K. Jettmar discussed with me, is particularly relevant for the Gungeria hoard.

<sup>8</sup> Agrawal, D. P. 1971, 149–150; Muhly, J. D. 1973, 261.

<sup>9</sup> The technology of the Indian non-Harappan metal industry has been intensively studied by K. Hegde and D. P. Agrawal. On the Harappan manufacturing techniques see especially Agrawal, D. P. 1969, 176–186; Yule, P. 1985.

<sup>10</sup> Visible in no. 361, but seldom with other antiquities in spite of D. P. Agrawal's interpretation of the side ridges of axes from Gungeria (1969, 181).

<sup>11</sup> Agrawal, R. C./V. Kumar (1982, 128) assume the use of *cire perdue* casting for the axes from Ganeshwar.

Site	%Cu	Sn	Pb	Zn	As	Ag	Bi	Ni	Co	Fe	An	Sio <sub>2</sub>	oxid.	N.D.	Object	Cat.
																no.
1 Brahmagiri	44.87									1.37		51.4			misc. axe	1
2 "	47.0	9.0								1.05			44.48		wire	2
3 "	98.7							tr					1.3		finger ring	3
4 Langnaji	98.12		0.28					0.48	0.18	0.61					knife	21
5 Lothal	97.27		2.51												anthrop.I	22
6 Somnath	81.86	12.82	1.21	tr			tr	tr	tr	2.57					axe I	25
7 Chandoli	95.11		1.68	0.62						1.81					axe III c	32
8 Daimabad	95.06		—					tr		tr					buffalo	37
9 "	98.93	0.85	—					tr		tr					rhinoceros	38
10 "	92.51	6.51	—					—		tr					"	38
11 "	91.48	5.36	0.93					tr		0.49					chariot	39
12 "	93.08	4.58	0.32					0.39		0.68					"	39
13 "	93.97	5.03	tr					—		tr					"	39
14 Jorwe	98.04	1.78													axe III c	50
15 Navdatoli	93.17	3.26	3.26							0.63					axe III a?	52
16 "	93.20	3.12	0.06	0.38				0.18	—	0.57					axe III a	54
17 "	93.0	3.0													axe V a var.	56
18 "	93.17	3.26	2.28	0.21				0.22	tr	0.63				0.23	drill?	70
19 "	91.56	4.37	2.28	0.28				0.37	tr	0.72					misc. bangle	78
20 Nevasa	94.41	2.72	0.61	0.13		0.10		0.2							chisel	86
21 Mitathal	98.43	—	—		tr	—	—	tr	—	1.14					bangle I	210
22 "	98.48	—	—		—	—	—	tr	—	1.15					double axe II	211
23 "	98.31	—	—		—	—	—	tr	—	1.19					axe III a	212
24 "	98.35	—	—		tr	—	—	tr	—	1.2					bangle II	213
25 "	98.33	—	—		—	—	—	tr	—	1.26					misc. bangle	214
26 Bisauli	98.77							0.66							anthrop. II	241
27 Fathegarh	Cu	tr	Pb												sword	259
28 Kheri Manpur	Cu	—	0.01		1.16			0.05		0.06					axe III a	272
29 Mainpuri	Cu	tr	tr							tr					axe III a	281



The main exceptions are the objects of the Chota Nagpur group, which to judge from their shape, were generally manufactured in open face moulds. Thus the obverse convex face of an axe-ingot, for example, during casting would be that part which came into contact with the mould and the flat reverse side faced upwards. This is further suggested by examples such as no. 906 which shows wrinkled casting skin (from atmospheric cooling) on the flat face (*Plate F*). On the other hand, axe-ingots such as nos. 843, 850 and others show a 'dimple' about a centimetre in width on the convex face, which is indicative of the impression of a hook poked into the still molten metal in an open face mould in order to move the unfinished implement while it cooled. Numerous axe-ingots (especially type VI) would seem to have been poured onto flat or almost flat surfaces. Bar celt-ingots clearly were cast obverse surface face down, in open moulds. Their reverse faces are often concave as a result of the contraction of the metal during cooling.

No two metal objects are identical in shape and thus could not have been cast in the same mould. The overall rough and grainy surface, particularly of the Chota Nagpur objects, could be a result of sand casting. Therefore the mould would have been remade anew with each use. But the typical superficial pitting and sometimes fugitive surface may also have resulted at least in part from poor, low-temperature casting and/or corrosion. Specific instances of all three phenomena combined are clearly observable.

In addition to casting, other techniques are known. Metal vessels were raised from thin sheet metal and D. P. Agrawal has found evidence of cold working on some harpoons.<sup>12</sup> Most metal artifacts from the doab and Haryana seem to have been smoothed after casting. Other techniques include pattern gouging, as on the anthropomorphs, and other kinds of chasing; the splitting off of barbs from type III harpoons; the beating of fine rods into wire and the pattern hammering of certain axe-ingots.<sup>13</sup> Unfortunately the tools used in these techniques are not preserved.

To judge from the symmetry and skillful workmanship of the implements from the Ganges-Yamuna doab and from Haryana, great care was taken in the manufacture. Several exist, however, which are anciently cracked but otherwise undamaged.<sup>14</sup> Such flaws, the aforementioned asymmetrical form of some artifacts, in addition to the (originally) rough surface, particularly of implements from Chota Nagpur, would have compromised the effectiveness of these artifacts as tools and weapons.

## FUNCTION

The circumstances of the deposition and observations on artifact wear play a role in the interpretation of the function of the Copper Hoards. Even if most of the hoards have not survived intact, at least it seems clear that their constituent artifacts were deposited nearly always in an undamaged condition and that the Hoards originally differed greatly from each other in size and content. Axes and other implements may at first glance seem anciently damaged, but closer inspection usually shows this to have been caused by corrosion, poor casting, too rapid cooling or the depredations of local discoverers intent on finding precious metal beneath the unprepossessing corroded surface. Numerous stray metal objects show wear or damage which could be either recent or ancient, but a few, whose worn edges are heavily oxidized, were for certain used anciently (*Plate C*, 574. 645). These include some type II and

<sup>12</sup> Agrawal, D. P. 1969, 187.

<sup>13</sup> Especially nos. 361–366. 388–390.

<sup>14</sup> Cracked: nos. 280. 290. 291. 352. 772. 774. Casting flaws: nos. 224. 572. 573. 575.

type IIIa axes.<sup>15</sup> Likewise, the traces of hafting (at the butt), noticeable by means of a difference in the patina, are limited to a few type II axes (*Plate C*, 574),<sup>16</sup> a further indication of artifactual use. While other axe types may also have served a utilitarian function, this can neither be demonstrated by traces of use-wear nor those of hafting. There is reason to question whether type II axes, most of which are known as strayfinds, actually were deposited with the otherwise usually undamaged Copper Hoard objects. A conspicuous lack of ancient use-wear represents a key factor in the interpretation of the Hoards.

Numerous axes, chisels and occasionally other implements (except those from Chota Nagpur) show round indentations arranged in symmetrical patterns hammered into one face (cf. *Plate B*). A few axes also are stamped with script-like signs which find parallels painted on the protohistoric pottery, for example, from Lal Qila,<sup>17</sup> and in the patterns of indentations which appear on certain axes. The meaning of these signs is uncertain.

Many of the Copper Hoard axes were manufactured too small or too large,<sup>18</sup> too thin or too thick,<sup>19</sup> too light or too heavy or too dull to have been used or subsequently cold worked into finished axes. Most type I double axes, for instance, were fashioned of thick copper with blunt edges. One from Bhagra Pir, on the other hand, has sharp edges and is almost paper thin (no. 384), and another unwieldy example from there (no. 382) measures nearly half a metre in length. The blade tips of still another from Parihati (no. 435) are so ill-positioned in relation to the small of the waist as to prevent the fitting of all but the thinnest handle, if this type was hafted at all. Furthermore, the thick and weighty type IVc axes and bar celts, which would be as difficult to haft as to use, comprise further such problematic examples.

Representing the Chota Nagpur area are about 140 copper objects which at first glance appear to be axes, but which bear only a very general resemblance to known Indian prehistoric axe types.<sup>20</sup> They are often heavy, large, somewhat planoconvex, and almost invariably show dull and rounded 'cutting edges' (I prefer the term 'lead edges'). An interpretation for these often irregularly shaped objects as ingots finds numerous parallels outside of India.<sup>21</sup> But at the same time it raises the inevitable question of why only such axe-ingots and not axes themselves occur in Chota Nagpur, for only four prehistoric axes are known from there.

As with axe-ingots from this copper-rich area, bar celt-ingots and miscellaneous discs as well as the numerous fragments thereof show no traces of use-wear<sup>22</sup> and served no obvious function. There is no good reason to see the former as ard points or digging sticks.<sup>23</sup> For example, those used by the Chen-

<sup>15</sup> New damage can obscure ancient damage. Anciently damaged axes: nos. 548. 560. 561. 564. 569. 606. 612. 645. 663 (?). 982 (?). 999. D. P. Agrawal (1982a, 259) mentions the presence of use wear on "bar celts", a point which I emphatically reject: *infra* n. 23.

<sup>16</sup> Nos. 569. 570. 574. 579. 583. 585 (eight examples). The difference in the patina as well as ancient use-wear are nearly impossible to photograph. A glimpse into what the wooden parts of such ancient artifacts may have looked like can be won by turning to the Neolithic wooden objects excavated at Burgäschisee-Süd in Switzerland: Müller-Beck, H.-J. 1965.

<sup>17</sup> Gaur, R. C. 1973 fig. 2.

<sup>18</sup> Small: no. 544, type VI axe-ingots. Large: type IVb and IVc axes, some type I double axes, also bar celts.

<sup>19</sup> Thin: nos. 225-228, type VI axe-ingots. Thick: type IIIe, IVf axes.

<sup>20</sup> Certain examples also exist in the West: cf. nos. 814. 921-923.

<sup>21</sup> *Supra* I n. 5; La Baume, W. 1925; Kibbert, K. 1980, 17. 36. 38. 39. 48. 53. 56 pls. 1-4; Mayer, E. F. 1977, 14. 18. 22. 69. As implement currency in South America: Holm, O. 1978; Easby, D. T. et al. 1967.

<sup>22</sup> Exception: no. 387 (*Plate C*).

<sup>23</sup> Chakrabarti, D. K. 1975, 295. On ard points: Leser, P. 1971; Šach, F. 1968; Rees, S. 1977; Forni, G. 1980. R. C. Agrawal believes the (IVc) axes from Nandlalpura to be mining tools (Agrawal, R. C./V. Kumar 1982, 131). On mining tools from roughly this time in the Near East which shed some light on such implements cf. Conrad, H. G./B. Rothenberg 1980; Kyrle, G. 1924.



chu, the Munda and other groups are pointed, relatively light and circular in cross section.<sup>24</sup> The long bar celts of the distant Gungeria hoard, with their axe-like lead edges and (in section) rectangular shafts also seem ill-suited as hand-held digging instruments. To haft and use these overly long implements when hafted presents obvious problems. On the other hand, bars may be compared with the crowbars or *sabar* of the Oraon, who settled the Chota Nagpur area relatively recently.<sup>25</sup>

The question of useability also relates to harpoons. Except for type III harpoons, all of the harpoons studied have a tapered shank which enables the head to be detached from the shaft, once the former has penetrated the game (cf. *Plate D*).<sup>26</sup> Also characteristic are eyelets or lugs located near the tang, in order to secure the head to a retrieving line. A large struggling aquatic animal could break the shaft or point of a fixed spear, but the detachable head allowed the animal to thrash in the water without directly straining the gear, while its struggles imbedded the barbs well into the flesh.<sup>27</sup> As is clear from a variety of historical contexts, harpoons are weapons often highly specialized, primarily intended for aquatic game. Considering by analogy the relatively small size of those used by the Pharaonic Egyptians or ever-inventive Eskimos<sup>28</sup> for hunting large aquatic animals, the question remains, for which doab game would hunters require metal harpoons up to one kilogram in weight and 44 centimetres in length? Even the crocodiles and gavals, which measure as long as five metres, the largest animals ever to have inhabited the doab in recent times, could have been subdued with far more modest weapons. Further doubts are awakened by the hooks of many harpoons which are dull (type I) or which curve back toward the shaft instead of outward (some of type II). Moreover, the often cited and lively cave representation of a rhinoceros hunt from the Mirzapur district of Uttar Pradesh,<sup>29</sup> in any case outside the doab Hoard area, need not necessarily show harpoons in use, but rather barbed spears without retrieving lines. This representation may well have nothing whatever to do with the Hoards. Since the distribution of harpoons lies in and near the doab, a previously swampy area<sup>30</sup> not particularly noted for the occurrence of rhinoceros, their use for hunting this animal seems even less likely. The obviously intended refined and awe-inspiring appearance of harpoons, the exaggerated weight and size, all present grounds to doubt their primary utilitarian function.

Swords and lance heads present even greater problems in that no studies have thus far been made on wear or edge damage, and because in individual cases hard and fast distinctions are often difficult to draw between these two artifactual categories. My own observations lead me to doubt that they actually were used in combat or for hunting. While type I and II swords are stoutly made and may weigh over two kilograms, most are small, slender and delicate. No. 1050 from Chandausi, for example, weighs a scant 295 grams. Presumably at this early time the armour worn in combat was light or non-

<sup>24</sup> von Fürer-Haimendorf, C. 1943, 30; cf. Datta-Majumdar, N. 1956, 35; Niggemeyer, H. 1964, 121-122; Subbarao, B. 1958 pl. 11, respectively for the Santal, Kuttia Kond and Kolam.

<sup>25</sup> Roy, S.C. 1915a, 135-136; Vidyarthi, L.P./B.K. Rai 1977, 128; Ryuji, Y. 1970 pls. 1. 2.

<sup>26</sup> Except for 'modern' western whaling harpoons, most have detachable, sometimes toggle heads. Cf. Mason, O.T. 1902 pls. 4. 6. 8. 9.

<sup>27</sup> Stewart, H. 1982, 65.

<sup>28</sup> Cf. Bates, O. 1917, 232-243 pls. 6-10; Obermaier, H. 1926; Hornell, J. 1929, 204-207; Ganguli, P., A. Pal 1963, 557-560. In this connection, it is interesting to note that according to local informants, the Gangetic porpoise nowadays still sometimes occurs upstream in the Ganges and Yamuna. It

may reach up to two metres in length. Because of the unpleasant taste this animal is not fished and eaten. To harpoon large baleen rorqual whales up to 20 metres long, the Eskimos used toggle-headed harpoon heads, some of which reached 20 centimetres in length. The whale was repeatedly harpooned with several weapons. Cf. Collins, H.B. 1937 esp. 215-217 pl. 72.

<sup>29</sup> Supra 3 n. 20.

<sup>30</sup> Suraj Bhan, however, has offered evidence that the bed of the Yamuna lay further to the west in Haryana during the Sothi and Harappan Periods and assumed its present course by the early part of the Painted Grey Ware Period. Haryana was better watered than it is today and was also a potential riverine hunting ground. Suraj Bhan 1972a, 125-128.

existent, which would condition accordingly the size and weight of the associated weapons. Even if this is so, light weight swords such as those from Mehsana and Kallur, with no great stretch of the imagination can be more plausibly understood as ceremonial, cultic or ritual objects than as combat arms.<sup>31</sup>

'Lance heads' have blades which may reach an impressive length. The short tang ('swordgrip') and the usual hook issuing from it negates an interpretation for these artifacts as swords. Considering the overall construction, examples weighing nearly two kilograms and measuring occasionally over 70 centimetres, owing to the weak point where the tang would be inserted into the shaft, do not seem sturdy enough to take the stress of real combat. The modern day Rengma, Angami and Lhota Naga tribesmen use various outsized iron spearheads for 'ceremonial' purposes which provide a modern parallel for the function of our lance heads.<sup>32</sup> On the other hand, J. M. Kenoyer, who lived in southern Assam for a number of years, has viewed Naga lances used for ceremonial dances, hunting, actual combat and as status symbols.<sup>33</sup> The blades of the largest may reach some 20 centimetres in length and the entire mostly iron construction, as much as two metres. As opposed to the aforementioned descriptions of spears used principally as ceremonial weapons, Kenoyer reports these heavy lances were certainly used against tribal enemies and big game. A further interesting modern parallel for the use of barbed spearheads is to be found with the eastern Angami warriors.<sup>34</sup> The shanks of their ceremonial spears are adorned by a series of purely ornamental barbs cut from the solid metal, which are regular, varying according to the martial achievements of the owner but very rarely exceeding five.

Hoard objects for which a cultic significance is certain include variously shaped anthropomorphs, which in fact are poorly suited as weapons, as some writers to the contrary have maintained.<sup>35</sup> A cultic interpretation for them, the delicate sheet silver bucrania and discs from Gungeria and the rare cult stand from Bartoli (no. 1076) is practically the only one available. This application also lies close at hand for the large copper ring from the Parihati hoard (no. 441). Too large for human adornment, it may have been intended for a divine wearer.<sup>36</sup>

Yet on the balance of what is known, the hoards of one area need not necessarily have served the same function as the very different ones of another (e.g. Chota Nagpur and the doab). Nor need a functional use exclude a spiritual one. Observations on use-wear and ergological considerations give at least some evidence for a votive deposition of metal riches, sometimes in ingot form, as opposed to

<sup>31</sup> One unique (ancient?) short sword (no. 1075) which deserves special comment has a thick barbed blade. Some years ago a weapon similar to it in size and shape was observed in Maharashtra, the proud owner of which explained that he carried it in the event of an encounter with a lion (orally expressed information, B. Allchin).

<sup>32</sup> One difficulty here lies in a lack of detailed ethnographic information. For example, the Tangkhuls use a spear of "great length" but only for thrusting (Hodson, T. C. 1911, 35). Mills has mentioned heavy and large iron spearheads used by the Rengma Nagas, but probably never in war (Mills, J. P. 1937, 38-40). He further notes spearheads averaging 25.4 cm and occasionally reaching 60 cm, used by the Lhota Nagas (Mills, J. P. 1922, 15-17), but gives no further information.

<sup>33</sup> Letter 11 August 1983.

<sup>34</sup> Hutton, J. H. 1969, 34. The shafts of these spears measure from 1.2 to 1.7 m in length.

<sup>35</sup> Das Gupta believes anthropomorphs to represent the

Vedic *vajra* weapon (Das Gupta, T. K. 1975, 75-81). In his view they were fitted with a handle and thrown. No trace, however, of hafting exists on extant anthropomorphs and the extreme weight of many present grounds to doubt this interpretation. Furthermore, the edges of anthropomorphs are not sharpened in a way which could be considered as evidence in support of Das Gupta's theory. Rau's suggestion that harpoons are a representation of the *vajra* seems equally unconvincing, to judge from certain Indian representations of this weapon (Rau, W. 1974, 42-44). D. P. Agrawal (1971, 200) ascribes to the belief that anthropomorphs possess boomerang-like properties. Suffice it to say that any flatish objects when thrown can travel in a whirling fashion.

<sup>36</sup> F. R. Allchin has observed rings similar in size to no. 441 from the Palamau district which may derive from prehistoric graves. I. Glover points out the similarity of no. 441 with modern African *manelli* (both orally expressed information).

traders' or casters' hoards,<sup>37</sup> ingot currency, grave goods or other kinds of caches.<sup>38</sup> Basic to any interpretation is the consideration that in prehistoric villages consisting of reed huts, precious objects could not be secured, a situation which may explain the hiding places for the hoards outside the settlements far away from the prying eyes of the neighbours.<sup>39</sup> A use for the hoards as artifact currency could be argued were it not for the fact that neither a system of progressive weights nor of identical ones is readily discernable. Furthermore, different artifact types of a given geographical group (e. g. in Chota Nagpur) sometimes have roughly the same weight. Other possible explanations also remain open such as potlach-like phenomena, whereby for various reasons quantities of precious objects are discarded or destroyed.<sup>40</sup>

Striking is the fact that metal implements which belong to the usual inventory of ancient and modern Indian villages, such as knives, digging tools and arrowheads are absent in the Copper Hoards. They and other cultural goods may, as later, have been made of wood or bamboo, a difficult prospect which would mean that we possess practically no implements of daily life (not even lithics) for the second millennium inhabitants of northeastern India.

Considering the foregoing material, in terms of the metal technology and artifact form, the culture on the subcontinent seems in essentials to have an individual character and to be free of tangible foreign influence. Characteristic is a high degree of regional diversity, at least as reflected in the differing distributional patterns of the various types. In order to build on the results of the present study, advantageous would be further intensive survey and excavation activity in areas identified as poorly known. The detailed documentation of the ceramic and other finds associated with the Hoards also will add further dimension to our knowledge and will help raise it to the level of a differentiated prehistory in the broadest sense.

<sup>37</sup> But the broken bar celt-ingots and broken planoconvex disc from Aguibani (no. 358) may be simply ingots which were broken (if this is not secondary and modern) in order to facilitate their melting. Cf. Weisgerber, G. 1980, 76–77 fig. 7.

<sup>38</sup> These categories derive from Wilke, G. 1925, 362–363.

<sup>39</sup> Peuke, H.-J. 1973, 51.

<sup>40</sup> K. Jettmar pointed this possibility out to me.

# NON-EVALUATABLE, UNPUBLISHED FINDS

A number of only preliminarily or poorly published finds could not be included in the present work. Inasmuch as one or the other in some way may round out our knowledge of the distribution of metal objects, the following list is appended:

- Ahar**, Dist. Udaipur, Raj. Excavated, but find circumstances unknown. — Strap (?) c.  $8.9 \times 1.4$  cm. — Present whereabouts unknown. — Agrawal, R.C. 1981a, 29 pl. 6.
- Ahar**, Dist. Udaipur, Raj., trench A, layer 13, Phase Ib. — Copper sheet,  $5.6 \times 4.5 \times 0.1$  cm, fragmentary, Cu 96.28%, Fe 1.22%, Pb 1.64%, Ni 0.26%, Mn 0.31%. — Present whereabouts unknown. — Sankalia, H.D. et al. 1969, 225.
- Ahar**, Dist. Udaipur, Raj. Excavated. — Flat copper strip with rounded end. C.  $6.0 \times 2.0$  cm. — Gov't. Mus. Ahar. — Agrawal, R.C. 1981a, 29 pl. 6.
- Ahar**, Dist. Udaipur, Raj. Excavated. — Axe, c.  $13.0 \times 10.0$  cm. — Directorate of Archaeology and Museums Rajasthan, Jaipur. — Agrawal, R.C. 1981a, 29 pl. 9, 6; Agrawal, R.C./V. Kumar 1982, 130–131.
- Atranji khera**, Dist. Etah, U.P. Period II, found with Black and Red Ware. — Copper ear ring. — Present whereabouts unknown. — Gaur, R.C. 1967, 47.
- Atranji khera**, Dist. Etah, U.P. Period I, found with OCP. — Unidentified piece of copper and terracotta crucibles containing grains of copper. — Present whereabouts unknown. — Gaur, R.C. 1971, 45.
- Azadnagar**, Dist. Indore, M.P. — Arrowhead with 2 holes. — Present whereabouts unknown. — Agrawal, R.C. 1981a, 27.
- Bahadarabad**, Dist. Saharanpur, U.P. — In addition to the bangles included in the catalogue, 3 others were originally found, the present whereabouts of which is unknown. — Lal, B.B. 1953, 71. 91 pl. 31; Müller-Karpe, H. 1980 pl. 565 B, 1.
- Bargaon**, Dist. Saharanpur, U.P. Strayfind. — Fragmentary chisel. — Present whereabouts unknown. — Deva, K. 1969, 77; Deshpande, M.N. 1972, 6.
- Bartola**, Dist. Ranchi, Bi. — Washed out from a hillside, lying one atop the other were 2 “celts”, the larger measuring  $15.7 \times 12.0$  cm (1064 gm); the smaller measuring  $14.5 \times 11.0$  cm (838 gm) (our no. 369?). — Patna Mus. (not located 1983). — Brown, J. Coggin 1915a, 127–128; Lal, B.B. 1951, 38A.
- Bartola**, Dist. Ranchi, Bi. — “Axe” (axe-ingot) transferred from the Patna Mus. to the State Mus. Orissa (?): Inv. no. 2707.
- Bhagra Pir**, Dist. Mayurbhanj, Or. — Double axes (type I) nos. 236 (?) and/or 239 transferred from the Patna Mus. to the State Mus. Orissa (?); another example on deposit in the Baripada Mus. — Lal, B.B. 1951, 38A; Agrawal, U. 1980, 77.
- Bithur**, Dist. Kanpur, U.P. — Axe, type IIIa? 6.98 (pres.)  $\times 6.35$  cm, butt end preserved. — State Mus. Lucknow (Shastri, not located 1983). — Shastri, H. 1915, 4–5 pl. 4, 5.
- Bithur**, Dist. Kanpur, U.P. — Fragment of an axe.  $16.51 \times 5.71$  cm. — Present whereabouts unknown. — Smith, V.A. 1907, 53 pl. 6 upper row, right (figure unclear).
- Bithur**, Dist. Kanpur, U.P., purchased by Shastri in 1904. — Axe,  $7.3 \times 11.43$  cm. — Present whereabouts unknown. — Smith, V.A. 1907, 53 pl. 6; Shastri, H. 1915, 1. 2.
- Bithur**, Dist. Kanpur, U.P. — Axe fragment, c.  $14.28 \times 3.12$  cm. — Smith, V.A. 1907, 53 pl. 6, upper row, third from right (figure unclear).
- Bithur**, Dist. Kanpur, U.P. — Three axes, one of which measures c.  $17.78 \times 12.06$  cm. — Temple of Bava Gudar-das Uttam Das. — Shastri, H. 1915, 3.
- Bithur**, Dist. Kanpur, U.P. — Axe.  $20.63 \times 7.62$  cm. — Smith, V.A. 1907, 53 pl. 6, lower row, second from right (figure unclear).
- Bithur**, Dist. Kanpur, U.P. — Axe fragment,  $11.43 \times 12.06$  cm. — Smith, V.A. 1907, 53 pl. 6, upper row, second from right (figure unclear).
- Bithur**, Dist. Kanpur, U.P. — Two axes and three harpoons. — Present whereabouts unknown. — Smith, V.A. 1905, 232.
- Bithur**, Dist. Kanpur, U.P. — Harpoon, type II. C.  $33.8 \times 6.8$  cm, 1136 gm (same as no. 1016?). — Municipal Mus. Allahabad (Shastri — not located 1983); Butt end of an axe.  $6.98 \times 6.35$  cm, 453 gm. State Mus.

- Lucknow (not located 1983). – Shastri, H. 1915, 3 pl. 2, 4. 5; Rau, W. 1974 foldout 2.
- Chandausi**, Dist. Moradabad, U.P. – Miscellaneous harpoon. – Jhansi Mus. U.P. – Delhi Hindustan (a daily newspaper in Hindi) 17.01. 1980 p. 6.
- Chandoli**, Dist. Pune, Mah. – “Spearhead” (excav. no. CDL 105); Cu 96.39%, Fe 1.23%, Pb 1.55%, Zn 0.41%, As tr., Bi tr., Co tr., Ni 0.31%. – Hegde, K.T.N. 1965 a, 185–186.
- Chandoli**, Dist. Pune, Mah. Layer 2 of trench 3. – Fragmentary copper ring. D 1.2 cm. – Present whereabouts unknown. – Deo, S.B./ Z.D.Ansari 1965, 113–114.
- Chandoli**, Dist. Pune, Mah. Layer 1. – Fragmentary copper anklet. – Present whereabouts unknown. – Deo, S.B./Z.D.Ansari 1965 a, 114.
- Chandoli**, Dist. Pune, Mah. – Fragmentary copper rod. – Present whereabouts unknown. – Deo, S.B./Z.D.Ansari 1965, 115.
- Chirand**, Dist. Saran, Bi. Sub-period IA, found with white painted black and red ware (Chalcolithic). – “restricted use of copper”. Verma, B.S. 1967, 6–8; idem. 1969, 7.
- Chota Nagpur**, Bi. – Axe ingot type III. On display and thus not examined. – S.C.Roy Coll. Ranchi (132). – Unpub.
- Daimabad**, Dist. Ahmednagar, Mah. Phase V, Jorwe Culture (orally expressed information S.A.Sali). – Irregular sheet metal object, c. 11.4 × 7.4 cm. – Anon. 1959, 15. 17 pl. 21 B, 4.
- Daimabad**, Dist. Ahmednagar, Mah. Phase V, Jorwe Culture. – Sheet metal fragment. C. 10.9 × 5.4 cm. – Anon. 1959, 15. 17 pl. 21 B, 1.
- Daimabad**, Dist. Ahmednagar, Mah., from different levels. – Fishhook, ring, bangle and piece of wire. – Deshpande, M.N. 1979 a, 31.
- Daimabad**, Dist. Ahmednagar, Mah. Phase II, Late Harappan. – “Fragment of a copper/bronze celt, a bead of gold leaf.” “rare gold pendant” (Daimabad II!). – Sali, S.A. 1980, 35; Allchin, B./F.R.Allchin 1982, 272.
- Daimabad**, Dist. Ahmednagar, Mah. – Phase I (Sawal-da Culture): two copper bangles. Phase III (Buff and Cream Ware Culture): “thin piece of copper”. Phase IV (Malwa Culture): “thin almond-shaped copper object”, tanged spearhead with midrib of copper. Phase V (Jorwe Culture): “heavy copper bangle”. – Deshpande, M.N. 1980, 35–37.
- Dist. Bulandshahr**, U.P. – “Two specimens of somewhat similar shape [to the Gungeria implements] had been found in the Bulandshahr Dist.” Bloomfield, A. c. 1890, 4.
- Dist. Dhanbad**, Bi. – Axe analysed (which?). – Agrawal, D.P. 1970, 17.
- Dist. Hardoi**, U.P. – “Sword in the possession of Mr. A.R.H.Murray of the U.P. Police Department.” Anon. 1915, 5.
- Dist. Hardoi**, U.P. – “Bronze axe” 13.33 × 10.16 cm. – Smith, V.A. 1905, 244.
- Dist. Manbhum** (Dhanbad), Bi. – Axe-ingot (inv. no. 248), transferred from the Patna Museum to the State Museum Orissa (?). – Unpub.
- Dist. Ranchi**, Bi. – Axe-ingot (Inv. no. 251), transferred from the Patna Museum to the State Museum Orissa (?). – Unpub.
- Dist. Rewa**, M.P. – “In 1871 Captain Samuells. . . sent two articles of copper from the Rewah District, which he thought were bronze or copper. Dr. Oldham states one to be a flat piece of rough copper, just as run from the smelting furnace; the other had one half of the surface rough as it had cooled, while the other half had been “hammered into two shoulders or semicircular recesses, admirably suited for the application of a handle of split bamboo or other wood, so as to serve for a very effective axe or club, but not a cutting instrument.” Present whereabouts unknown. – Elliot, W. 1875, 693.
- Dunria**, Dist. Dhenkanal, Or. – “Axes” transferred from the Patna Museum to the State Mus. Orissa (?) 245. 246. – Unpub.
- Ekalasimgha**, Dist. Ajmer, Raj. – Axe, 18.2 × 7.2 × 1.8 cm, 1675 gm. – Acquired by the Gov’t. Museum Jaipur in 1979. – Agrawal, R.C. 1980 a, 92; ibid. 1981 a, 29 pl. 9; 8; Agrawal, R.C./V.Kumar 1982, 131.
- Elana**, Dist. Jalor, Raj. – Axe. C. 17.5 × 9.5 cm. – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1978, 124; ibid. 1981 a, 29 pl. 9, 7; Agrawal, R.C./V.Kumar 1982, 131.
- Eran**, Dist. Sagar, M.P. Period I (Chalcolithic). – Gold disc. D 22.86 cm, 2 gm, circular copper object, 2 fragmentary copper axes. – Present whereabouts unknown. – Bajpai, K.D. 1967, 15.
- Fathgahr**, Dist. Farrukhabad, U.P. – Thirteen swords, 1 anthropomorph originally found (cf. nos. 255–259). – Anderson, J. 1883, 405–406.
- Ganeshwar**, Dist. Sikar, Raj. Excavated. – “100 copper objects, all of the Indus complex, including more than 400 arrowheads, 50 fishhooks, numerous chisels, rods, beads, pins, blades, spear heads, balls, 60 flat celts etc.” – Agrawal, R.C. 1981, 79; idem. 1981 a, 27.
- Ganeshwar**, Dist. Sikar, Raj. – Front end of an axe. – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1980, 91; idem. 1981 a, 27–29 pl. 5; idem. 1981 b, 60–61.
- Ganeshwar**, Dist. Sikar, Raj. – Axe, c. 23.9 × 10.7 cm. – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1981 a, 27 pl. 9, 3.
- Ganeshwar**, Dist. Sikar, U.P. Excavated. – Finger

ring (?). D c. 1.7 cm, wire D c. 0.15 cm. – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1980, 91; idem. 1981a, 27–29 pl. 5; idem. 1981b, 60–61.

**Ganeshwar**, Dist. Sikar, U.P. Excavated. – Point. C. 4.0 × 0.8 cm. – Directorate of Archaeology and Museums Rajasthan, Jaipur. – Agrawal, R.C. 1980, 91; idem. 1981, 27–29 pl. 5; idem. 1981b, 60–61.

**Gilund**, Dist. Udaipur, Raj. – “. . . a few bits of copper and the typical painted black and red ware.” – Lal, B.B. 1960, 41.

**Gungeria**, Dist. Balaghat, M.P. – Axe, type VII (?). One of two examples (cf. no. 466) in the Ethnographical Mus. Copenhagen (letter from Dr. Søren Dietz 22.04.83). – Unpub.

**Gungeria**, Dist. Balaghat, M.P. – Axe, 18.41 × 12.7 cm and a bar celt (?) L 64.41. – Obtained from Sir Walter Elliot 1874; formerly in the National Mus. of Antiquities of Scotland now Royal Scottish Museum, Edinburgh. – Anon. 1892, 104 respectively Cat. nos. 633 and 634.

**Gungeria**, Dist. Balaghat, M.P. – “But this want was supplied in transmitting 8 silver and 17 copper implements as specimens of a much larger find exhumed in 1870 near the village of Gungeria . . .” [objects presumably sent to the Society of Antiquaries of Scotland]. – Present whereabouts unknown. – Elliot, W. 1875, 693–694.

**Hallur**, Dist. Dharwar, Kar. Chalcolithic. – “Gold ornaments”. – Present whereabouts unknown. – Anon. 1980, 25.

**Hami**, Dist. Palamau, Bi. – “Axe” (Inv. no. 259), transferred from the Patna Museum to the State Museum of Orissa (?). – Unpub.

**Harra Chowra Darh** at Bichna, Dist. Ranchi, Bi. – Axe, type IIIa, c. 12.7 × 7.11 cm. – Present whereabouts unknown. – Roy, S.C. 1915, 242 pl. 3B. Same as no. 614 from Nankom (?).

**Inamgaon**, Dist. Pune, Mah. Jorwe Culture. – Tongs (nos. 234, 241), fishhook (no. 401), two type IV decoratively engraved bangles (nos. 1104A, 1105F). – Archaeological Mus. Deccan College Postgraduate Inst. Pune. – Unpub.

**Inamgaon**, Dist. Pune, Mah. Late Jorwe III. – Long barrel and circular gold beads. – Present whereabouts unknown. – Dhavalikar, M.K. 1976, 52.

**Inamgaon**, Dist. Pune, Mah. Jorwe Culture. – “Fishhooks . . . a small pan of copper . . . beads . . . including a barrel-shaped one of gold.” – Ansari, Z.D. 1973, 27.

**Inamgaon**, Dist. Pune, Mah. Period I–II. Jorwe Culture. – “Copper tool kit.” Ansari, Z.D. 1981, 53.

**Jabalpur**, Dist. Jabalpur, M.P. – Axe (so-called Strachey celt), Sn 13.3%, Cu 86.7%. – Present whereabouts

unknown. – Anon. 1869, 60; Medlicott, H.B./W.F. Blanford 1874, 443; Elliot, W. 1875, 691. 693; Agrawal, D.P. et al. 1978, 41: incorrectly gives present whereabouts as in the British Museum.

**Jhadol**, Dist. Udaipur, Raj. – “. . . Vestiges of copper in association with Ahar pottery . . .” – Present whereabouts unknown. – Agrawal, R.C./V. Kumar 1982, 131.

**Jokha**, Dist. Surat, Guj. Period I. Chalcolithic, Late Harappan, Malwa and Jorwe wares. – Copper axe fragment (type ?). 5.2 × 2.3 × 0.6 cm, 23 gm. – Present whereabouts unknown. – Mehta, R.N./S.N. Chowdhary 1975, 10 pl. 7B; Mehta, R.N. et al. 1971, 55. 66–69 pl. 8B.

**Kallur**, Dist. Raichur, Kar. – “A couple of flat celts” (found with the Kallur hoard). – Present whereabouts unknown. – Lal, B.B. 1951, 20. 38A.

**Kamdara**, Dist. Ranchi, Bi. – “Celt” analysed (which?). – Agrawal, D.P. 1970, 17.

**Karauli Tehsil**, see Kota.

Near **Karharbari**, Dist. Hazaribagh, Bi. – Axe-ingot; 5 such “celts” originally came to light with this find in 1871 of which 4 are on deposit in the Indian Museum in Calcutta (nos. 420–423 here). – Roy, S.C. 1916, 481–483.

**Kayatha**, Dist. Ujjain, M.P. Malwa Culture. – “Phases I and II are marked by the use of copper (a copper bar and a few copper bracelets)” (Wakankar, V.S. 1969, 27–28). Twenty-eight copper bangles found deposited in 2 red painted buff ware pots; Ansari, Z.D./M.K. Dhavalikar 1971, 340. “A large number of bangles, about 50” (Dhavalikar, M.K. 1978, 210).

**Khunti subdivision**, Dist. Ranchi, Bi. – Copper ring and two double axes acquired by the Rev. A. Campbell in 1915 and presented to the Bihar and Orissa Research Society. – Roy, S.C. 1915, 245; idem. 1916, 482; Piggett, S. 1944, 239 (5 axes mentioned).

**Kolber**, Dist. Hazaribagh, Bi. – Twelve “axes”. These axe-ingots are in various sizes, rough cast and finished and were sent to the Bihar and Orissa Research Society. – Campbell, A. 1916, 86.

**Kota** near Maholi, Dist. Sawaimadhopar, Raj. – Eight “thin” axes acquired 1. 13. 1977, ranging in length from 18.0–24.0 cm. – Gov’t. Mus. Jaipur. – Agrawal, R.C. 1980a, 92; idem. 1981a, 30 pl. 9, 2; Agrawal, R.C./V. Kumar 1982, 131.

**Kulhade-ka-Johade**, Dist. Sikar, Raj. – 58 copper axes. 20.0–25.5 cm in length. – Agrawal, R.C. 1978, 123–124.

**Kurada**, Dist. Nagaur, Raj. – “103 protohistoric objects such as 7 celts, 11 chisels, 4 ordinary bowls, 5 channel spouted bowls, 21 curved thin-bladed choppers and 55 rings. 10 are still on display in the Government Mu-

- seum in Jodhpur." Directorate of Archaeology and Museums Rajasthan, Jaipur. — Agrawal, R.C. 1980, 89–91; idem. 1981a, 29.
- Lal Qila**, Dist. Bulandshahr, U.P. 25–190 cm beneath the surface, OCP context. — "Copper objects including an arrowhead (?), a pendant, a bead and a broken piece of a celt." — Dept. of History, Aligarh Muslim University. — Gaur, R.C. 1971, 45; idem. 1973a, 156; idem. 1973a, 156; idem. 1973b, 38–39 pl. 50a.
- Lothal**, Dist. Ahmedabad, Guj., A period (?). — Axe, type I. C. 12.2 × 12.0 cm. — Lothal Mus. — Rao, S.R. 1961, 389 fig. 13.
- Madnapur**, Dist. Hardoi, U.P. — "Ten flat celts . . . bull figures engraved near the butt ends" (cf. nos. 273, 274). — Archaeological Mus. Deccan College Postgraduate Inst. Pune. — Misra, V.N. 1979; Agrawal, D.P. 1982, 208.
- Mitathal**, Dist. Bhiwani, Har. — Thirteen bangles were found here in 1965 and subsequently sold by villagers in Bhiwani. — Present whereabouts unknown. — Suraj Bhan 1975, 4.
- Mitathal**, Dist. Bhiwani, Har. — Period I: Bangle fragment (MTL-1,562). Period IIa: 3 copper objects of indeterminate type. Period IIb: 3 copper objects of indeterminate shape. — Dept. of Ancient History and Archaeology, Kurukshetra University. — Suraj Bhan 1975, 62, 66.
- Mitathal**, Dist. Bhiwani, Har. Excavated. — Axe fragment. C. 11.0 × 4.7 cm. — Dept. of Ancient History and Archaeology, Kurukshetra University. — Unpub.
- Mitathal**, Dist. Bhiwani, Har. Excavated. — Axe fragment. C. 2.4 (pres.) × 5.06 cm. — Dept. of Ancient History and Archaeology, Kurukshetra University. — Unpub.
- Mitathal**, Dist. Bhiwani, Har. Excavated. — Four axe fragments. 3–5 × 4.0–5.5 cm. — Dept. of Ancient History and Archaeology, Kurukshetra University. — Unpub.
- Mitathal**, Dist. Bhiwani, Har. Excavated. — Indeterminate object. c. 5.39 (pres.) × 5.28 cm, in plan with one rounded end, other end broken off. — Dept. of Ancient History and Archaeology, Kurukshetra University. — Unpub.
- Modhera**, see Dist. Mehsana in the catalogue. — Deshpande, M.N. 1972, 7; Gupta, S.P. 1972, 8.
- Nandalapura**, Dist. Jaipur, Raj. — "Six long bar celts measuring 27–28 cm in length and about 2 kg in weight". — Directorate of Archaeology and Museums Rajasthan, Jaipur. — Agrawal, R.C. 1981, 30–31 n. 21 pl. 9, 1; Agrawal, R.C./V.Kumar 1982, 131.
- Narsinghpur**, Dist. Narsinghpur, M.P. — 24 axes of various types. — A. Bloomfield Coll., present whereabouts unknown. — Bloomfield, A. c. 1890, 5–6 pl. 2 and appendix 2.
- Navdatoli**, Dist. West Nimar, M.P. Trench IV, A7, 2, Phase III of Period I, excav. no. 7353. — Fragmentary axe. c. 5.3 × 3.6 × 0.7 cm. — Sankalia, H.D. et al. 1971, 392 fig. 120.
- Navdatoli**, Dist. West Nimar, M.P. Phase III of Period I. — Finger ring (no. 10380b). — Present whereabouts unknown. — Sankalia, H.D. et al. 1971, 397.
- Navdatoli**, Dist. West Nimar, M.P. — 18 miscellaneous copper straps, "eye pencils" (antimony rods?) and a fish hook. — Present whereabouts unknown. — Das Gupta, P.C. 1964, 20.
- Oriup**, Dist. Bhagalpur, Bi. — Copper bangle(s). — Present whereabouts unknown. — Sinha, B.P. 1975, 6.
- Pariar**, Dist. Unnao, U.P. — Axe, type IV e. 11.04 × 4.12 × 0.31 cm. — Temple of Janaki Ji at Pariar. — Shastri, H. 1915, 3.
- Pariar**, Dist. Unnao, U.P. — Front end of an axe. 13.97 (pres.) × 8.89 cm. Butt end of an axe. 10.16 × 8.57 cm. — Temple of Janaki Ji at Pariar. — Smith, V.A. 1905, 232; idem. 1907, 53 pl. 7, lower, extreme right; Shastri, H. 1915, 2.
- Pariar**, Dist. Unnao, U.P. — "Large number of harpoon heads in the Temple of Somesvar Mahadeva". — Führer, A. 1891, 168, 172; Smith, V.A. 1905, 232.
- Patan**, Dist. Mehsana, Guj. — Antenna sword(s). — Sankalia, H.D. 1974, 397 note 379. Same as Nos. 1055–1057, 1060?
- Pind** near Padaliya, Dist. Chittorgarh, Raj. — Six Axes, type IV c (?). — Directorate of Archaeology and Museums Rajasthan, Jaipur. — Agrawal, R.C. 1978, 124; idem. 1981a, 29 pl. 9, 4; Agrawal, R.C./V.Kumar 1982, 130.
- Pondi**, Dist. Rewa, M.P. — "Workmen hit upon forty-seven rings and five celts apparently of copper. Of these three rings and one celt were presented to the Municipal Museum in Allahabad." Others in the Office of the Superintendent of Archaeology M.P. Rewa (Lal). — Lal, B.B. 1951, 22.
- Prakash**, Dist. Dhulia, Mah. Period I, Chalcolithic. — One shapeless bit of metal. — Thapar, B.K. 1967, 121.
- Provenance unknown**. — Axe. 13.33 × 8.57 cm. — Radhakrishna Temple on the Brahmavarta Ghat, Dist. Kanpur, U.P. — Shastri, H. 1915, 3.
- Provenance unknown**. — Axe. 12.06 × 6.35 cm. — Radhakrishna Temple on the Brahmavarta Ghat, Dist. Kanpur, U.P. — Shastri, H. 1915, 3.
- Provenance unknown**. — Harpoon, type II (Elliot harpoon). L 31.75 cm, 6.74% Sn. — Donated by Elliot 1874 to the National Mus. of Scotland (BS 635), now in the Royal Scottish Mus. (1956.590) Edinburgh. — Elliot, W. 1874, 691; Anon. 1892, 105 no. 635; Smith, V.A. 1905, 243.
- Provenance unknown**. — Harpoon, type II ? (one of



three similar harpoons). L. 36.83 cm, 680.4 gm. – Originally owned by C.T. Teichmann of Castle Eden, Co. Durham, later private collection (Canon Greenwell(?), Durham). – Shastri, H. 1915, 4 fig. 2; Gordon, D.H. 1950, 75 fig. 1, 14.

**Provenance unknown.** – Harpoon. Owned by a dealer in Lucknow. 19.68 × 6.98 cm, 453 gm. – Shastri, H. 1915, 6 (similar to his plate 3, 2).

**Provenance unknown.** – Fragment of a copper axe from an unidentified rock shelter. – Wakankar, V.S./R.R.R. Brooks 1976, 24.

**Pugal**, Dist. Bikaner, Raj. – “Good number of micro-liths, copper bits of spear heads etc.”. – Now in the Government Mus. at Jaipur. – Agrawal, R.C. 1981a, 29; Agrawal, R.C./V. Kumar 1982, 131.

**Raja Karna ka Qila**, Dist. Kurukshetra, Har. Trench G. – Socketted axe. L. c. 9.5 cm. Inasmuch as the excavations at this mound have revealed finds which date between 500 BC and 400 AD and not earlier, there is no good reason to place this piece any earlier. Parallels exist for the stylized designs on the butt in the Mauryan or Late Mauryan Period. – Present whereabouts unknown. – Sahni, D.R. 1924, 48–49 pl. 40a; Gordon, D.H. 1958, 138 fig. 18; Asthana, S. 1976, 81 fig. 52.

**Rangpur**, Dist. Surendranagar, Guj. Period III, Lustrous Red Ware Culture. – Pins. – Present whereabouts unknown. – Rao, S.R. 1963, 153; Gupta, S.P. 1963, 150.

**Tahsil Sadabad**, Dist. Mathura, U.P. – See Resgavaon

in the catalogue. – Two unpublished type V axe-ingots from this hoard stored in the Mathura Museum are not included here. – Agrawal, D.P. 1974, 14; Agrawal, R.C. 1981a, 31.

**Sabania**, Dist. Bikaner, Raj. – Garbled citation. See Saunia in the catalogue. – Agrawal, R.C. 1981a, 29.

**Saipai**, Dist. Etawah, U.P. – “. . . Hooked sword, anthropomorphic figures, celts, bangles, bar celts, harpoons . . .” This hoard could not be recovered in full. – Anon. 1973a, 40.

**Sanghol**, Dist. Ludhiana, Punj. Subperiod IB of settlement. Bara Ware and Cemetery H Ware. – Copper chisel. – Present whereabouts unknown. – Sharma, Y.D. 1982, 154.

**Sastevadi**, Dist. Pune, Mah. Period II, Jorwe Ware. – Copper fishhook. – Present whereabouts unknown. – Rao, S.R. 1975, 35.

**Somnath**, Dist. Junagadh, Guj. Period III. Prabhasa Ware and Lustrous Red Ware. – Gold ear ornament. – Present whereabouts unknown. – Sankalia, H.D. 1974, 383.

**Tarkhanwala Dera** near Anupgarh, Dist. Jaisalmar, Raj. – “. . . Two pieces of spear heads with long blades . . .” – Present whereabouts unknown. – Agrawal, R.C. 1981a, 29.

**Tekkalakota**, Dist. Bellary, Kar. TKT 1 area, Phase II (disturbed). – Bangles, fishhooks, pokers, wires. – Nagaraja Rao, M.S. 1967, 25; idem. 1978, 13.



## ABBREVIATIONS AND INDICES

## GENERAL ABBREVIATIONS

Bi. = Bihar  
c. = circa  
coll. = collection  
D = outside diameter  
Dist. = district  
gm = gram  
Guj. = Gujarat  
H = height  
Har. = Haryana  
Kar. = Karnataka  
Ker. = Kerala  
kg = kilogram  
L = length  
L/MW = length/width at midpoint  
Mah. = Maharashtra

M. P. = Madhya Pradesh  
NBP = Northern Black Polished Ware  
OCP = Ochre Coloured Pottery  
Or. = Orissa  
PGW = Painted Grey Ware  
pres. = preserved  
P. S. = Police station (thana)  
Punj. = Punjab  
Raj. = Rajasthan  
Th. = thickness  
T. N. = Tamil Nadu  
U. P. = Uttar Pradesh  
W = width  
W. B. = West Bengal

## ABBREVIATIONS USED IN THE REFERENCES

- Anc. Ind. = Ancient India  
 ARASI = Annual Report of the Archaeological Survey of India  
 ASI photo = Photographic album (with vol. no. and plate no.) of the photographs made for the Archaeological Survey of India, Jan Path, New Delhi  
 Bull. Mus. Arch. U.P. = Bulletin of Museums and Archaeology in Uttar Pradesh  
 Dawn of Civ. = Dawn of Civilization in Maharashtra. Exhibition catalogue, Prince of Wales Mus. 10. 11. 1975-23. 11. 1975 (Bombay 1975)  
 Festschr. Deshpande = M. S. Nagaraja Rao (ed.) Madhu. Recent Researches in Indian Archaeology and Art History. Festschr. Shri M.N. Deshpande (New Delhi 1981)  
 Essays = D. P. Agrawal/Dilip K. Chakrabarty (eds.), Essays in Indian Protohistory (Delhi 1970)  
 EW = East and West  
 Harappan Civ. = G. Possehl (ed.), Harappan Civilization (Warminster 1982)  
 IAR = Indian Archaeology. A Review  
 ILN = Illustrated London News  
 Ind. Ant. = Indian Antiquary  
 Ind. Arch. 1980 = R. K. Sharma (ed.), Indian Archaeology. New Perspectives (New Delhi 1982)  
 JAIH = Journal of Ancient Indian History  
 JASB = Journal of the Asiatic Society of Bengal  
 JBORS = Journal of the Bihar and Orissa Research Society  
 JBRS = Journal of the Bihar Research Society  
 JESHO = Journal of the Economic and Social History of the Orient  
 JNES = Journal of Near Eastern Studies  
 JR Anthr. Inst. = Journal of the Royal Anthropological Institute  
 JOI Baroda = Journal of the Oriental Institute of Baroda  
 Man and Environ. = Man and Environment  
 MASI = Memoirs of the Archaeological Survey of India  
 Nagpur 1970 = S. B. Deo (ed.), Archaeological Congress and Seminar Papers. 4<sup>th</sup> Annual Congress of the Indian Archaeological Society and the Seminars held at Nagpur on the 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> Nov. 1970 (Nagpur)  
 New Perspectives = R. K. Sharma (ed.), Indian Archaeology. New Perspectives (New Delhi 1982)  
 Potteries = B. P. Sinha (ed.), Potteries in Ancient India (Patna 1969)  
 Festschr. Prakash = Vijai Shankar Srivastava (ed.), Cultural Contours of India. Dr Satya Prakash Felicitation Volume (Jaipur 1981)  
 PASB = Proceedings of the Asiatic Society of Bengal  
 PBF = Prähistorische Bronzefunde  
 Radiocarbon = D. P. Agrawal/A. Ghosh (eds.), Radiocarbon and Indian Archaeology (Bombay 1973)  
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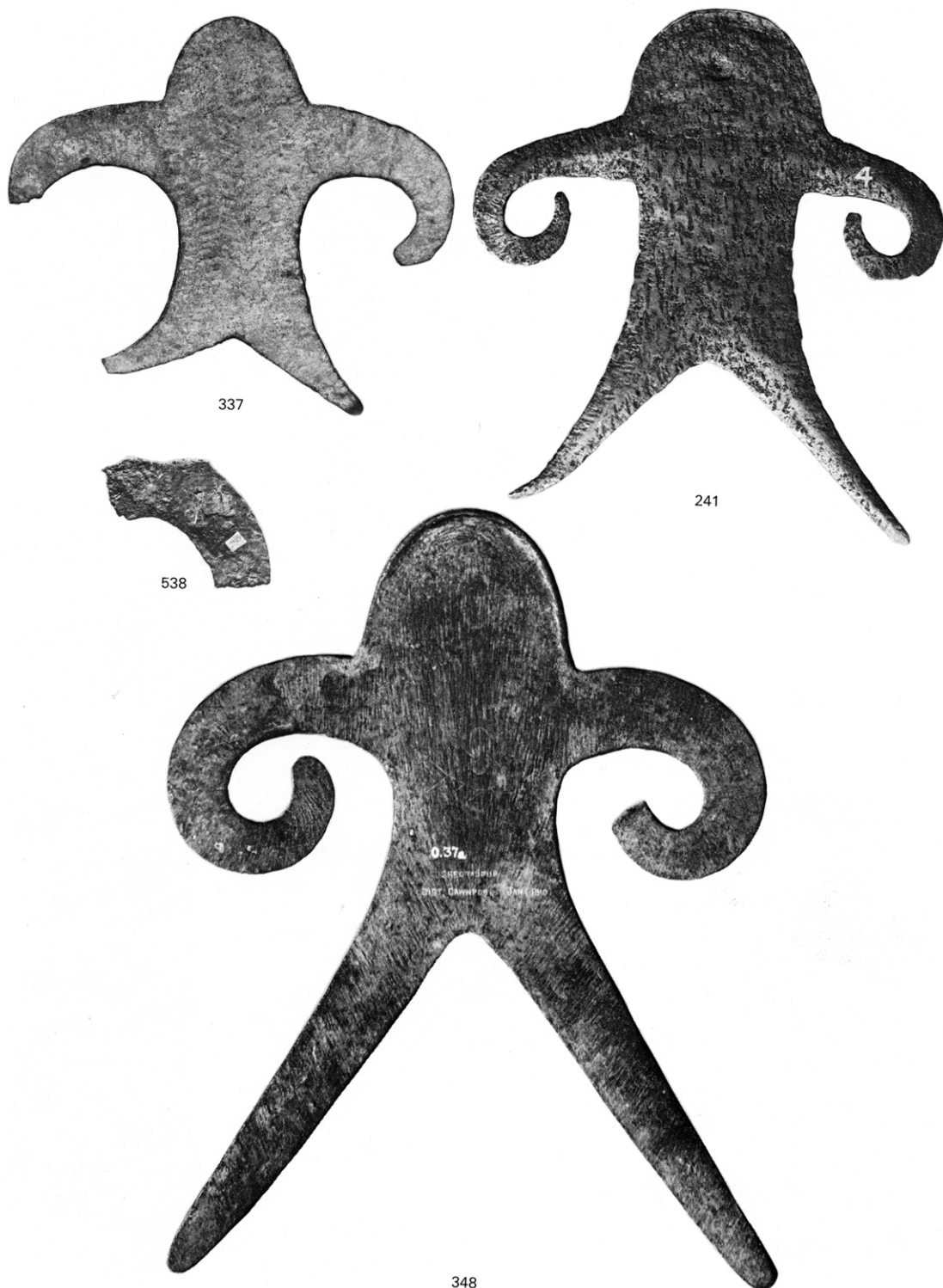
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## PLATES



Anthropomorphs. — 337 Saipai; 348 Sheorajpur; 538 Ambala; 241 Bisauli.



633



295



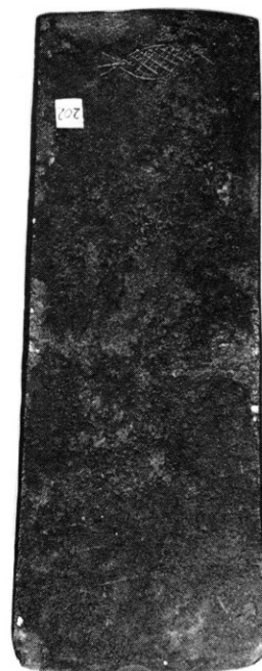
672



720



721



738



561



387



645



668

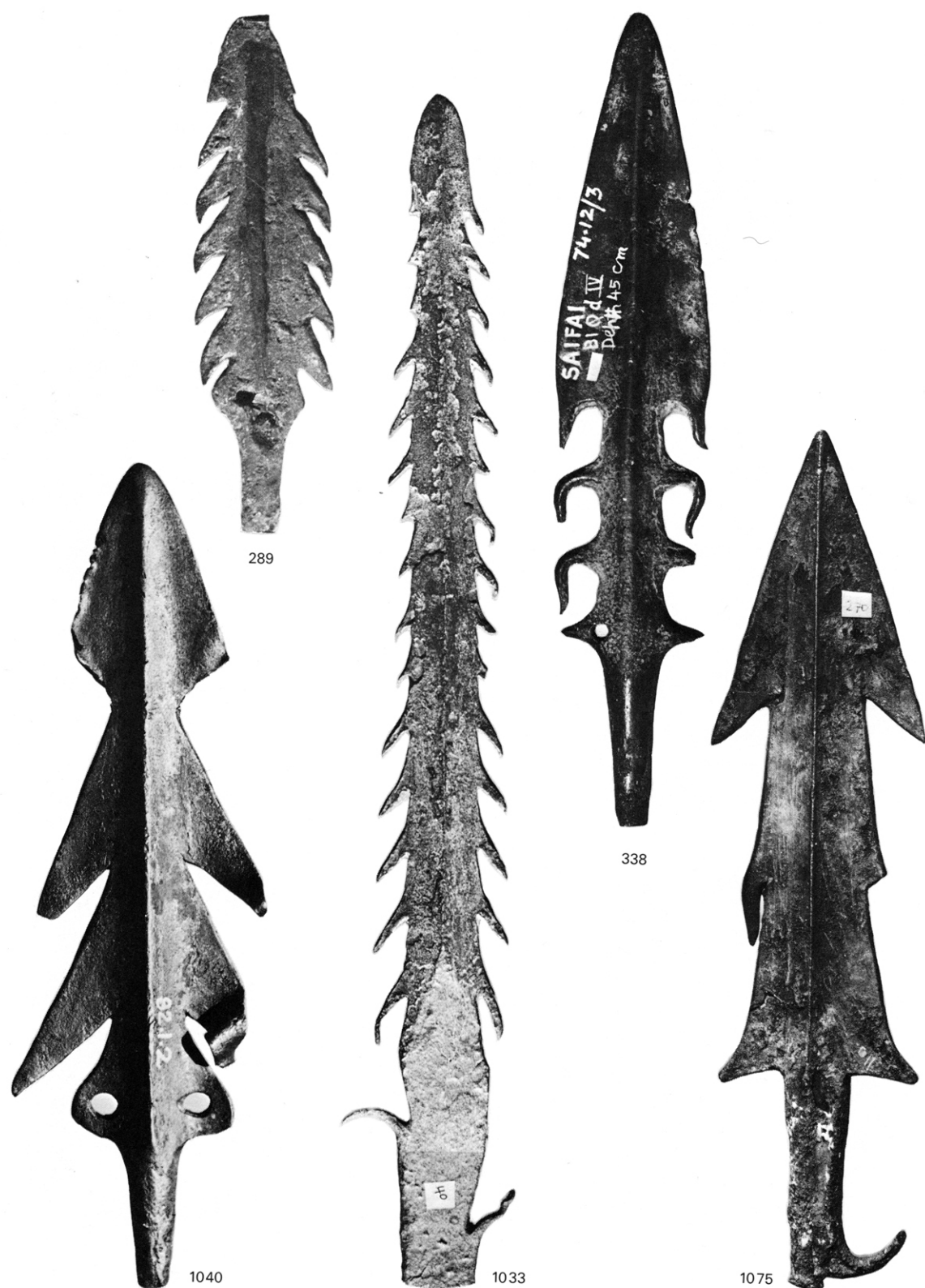


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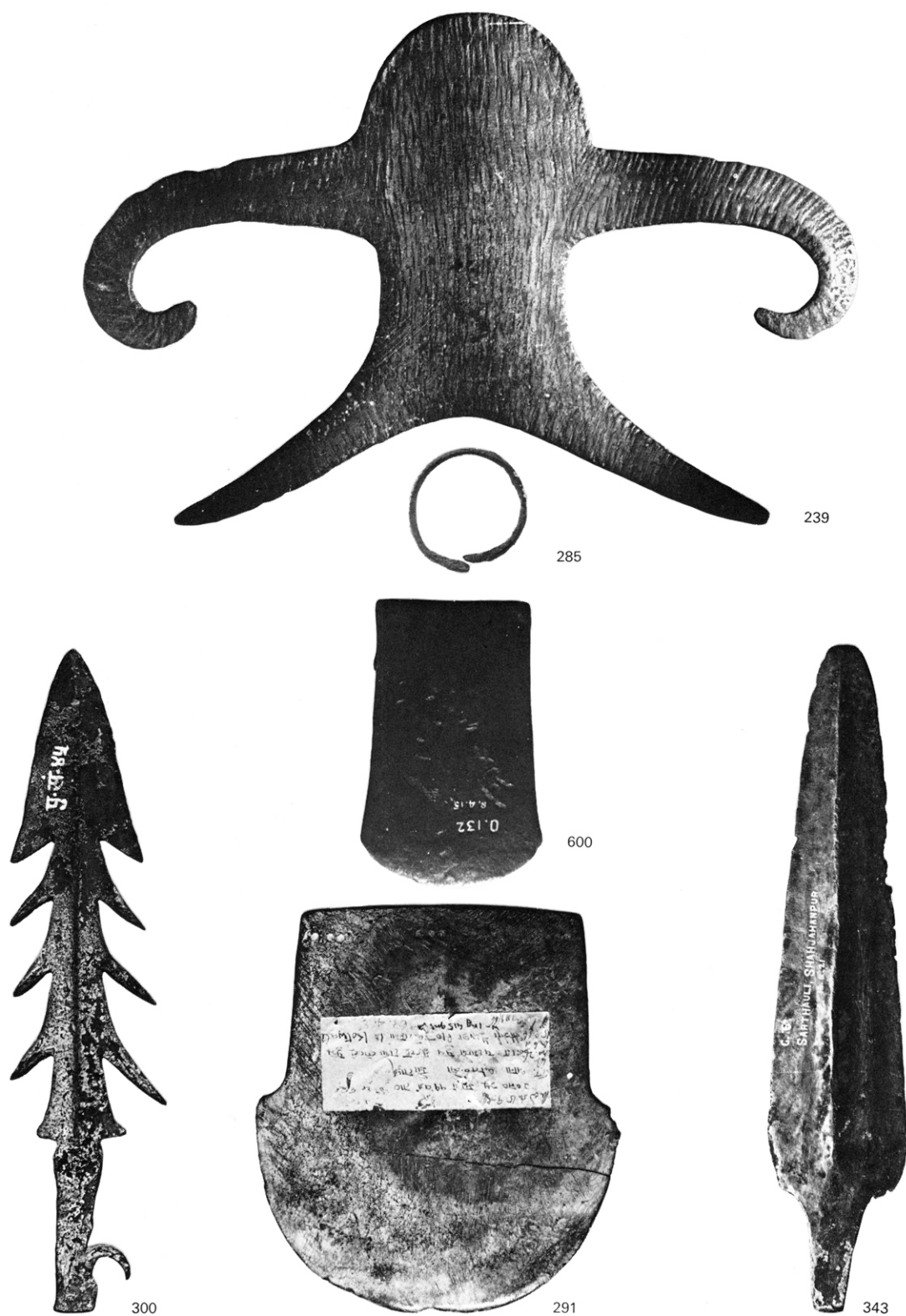


906

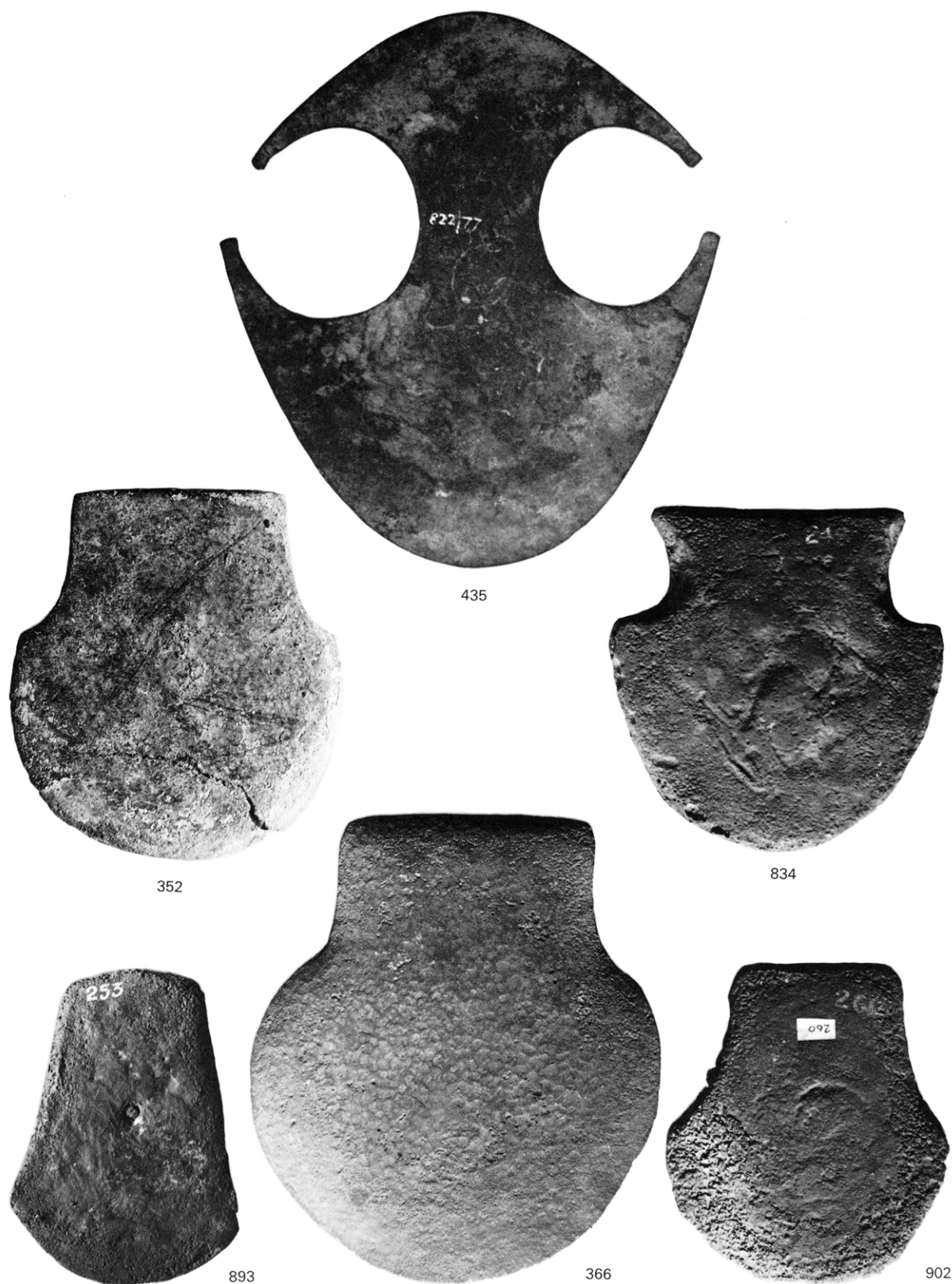
Ancient wear and damage: 387 Bhaktibundh; 561. 645 Rewari. – Modern damage: 668 Rewari. Casting skin: 906 P.S.Basia.  
Ancient hafting: 574 Rewari.



Representative barbed weapons. — 289 Mainpuri (type I); 338 Saipai (type II); 1033 Hansi (type III); 1040 Bendarkala (misc. harpoon); 1075 Rewari (hand weapon?).

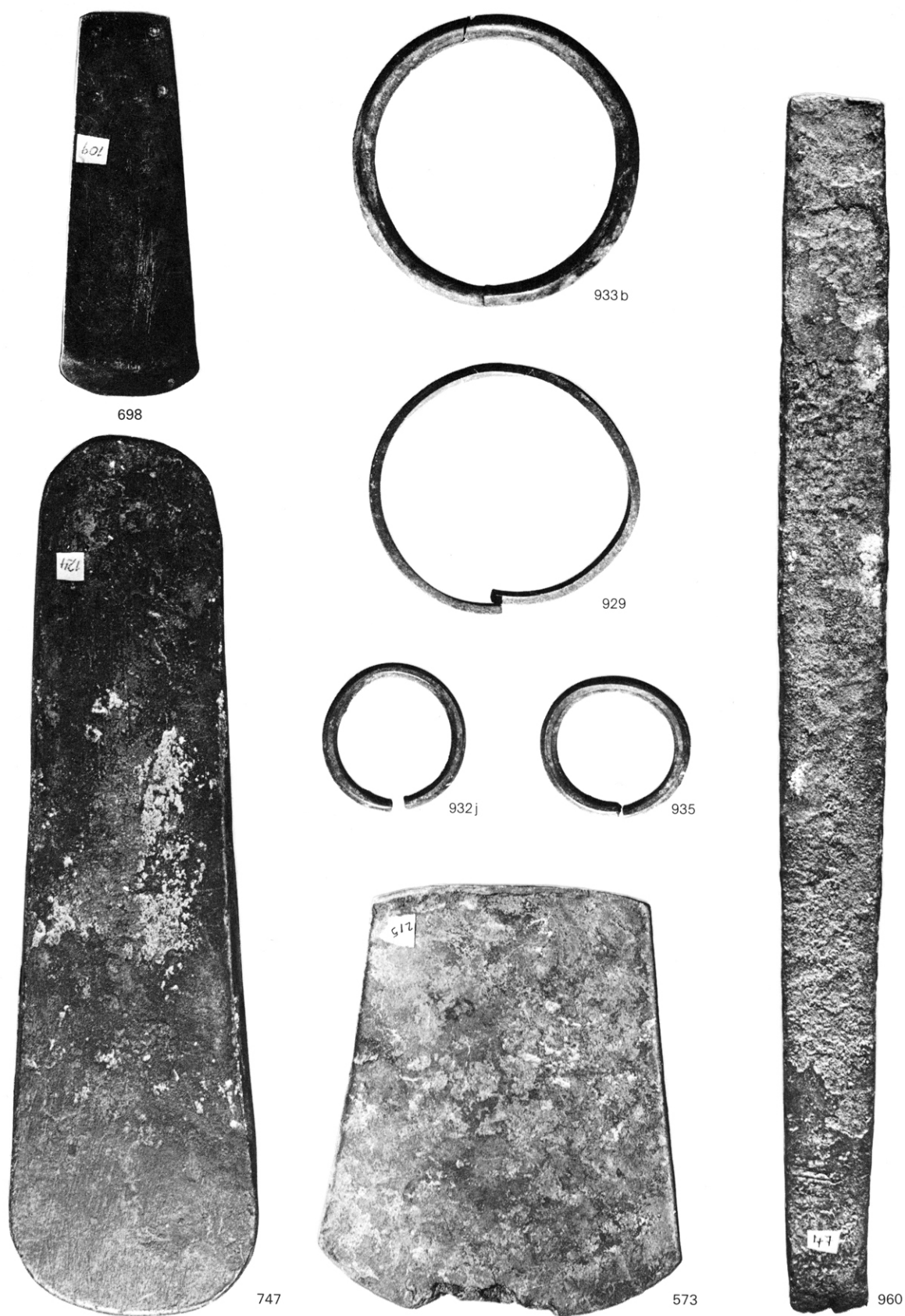


Representative finds from the Ganges-Yamuna doab. — 239 Bisauli; 285 Mainpuri; 291 Nakrihiya; 300 Nasirpur; 343 Sarthauli; 600 Bithur.



Representative finds from the Chota Nagpur area. — 352 Aguibani (axe-ingot Ib var.); 366 Andhari (axe-ingot Ib var.); 435 Parihati (double axe I); 834 Dist. Manbhum (axe-ingot II); 893 Dist. Ranchi (axe-ingot III); 902 Kera (axe-ingot III).



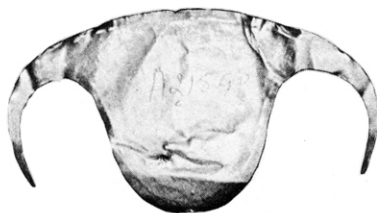


Representative finds from the northern Rajasthan-southern Haryana area. – 573 Rewari (axe II); 698 Rewari (axe IV a); 747 Rewari (axe IV c); 960 Hansi (bar), selected bangles.





522



513



527



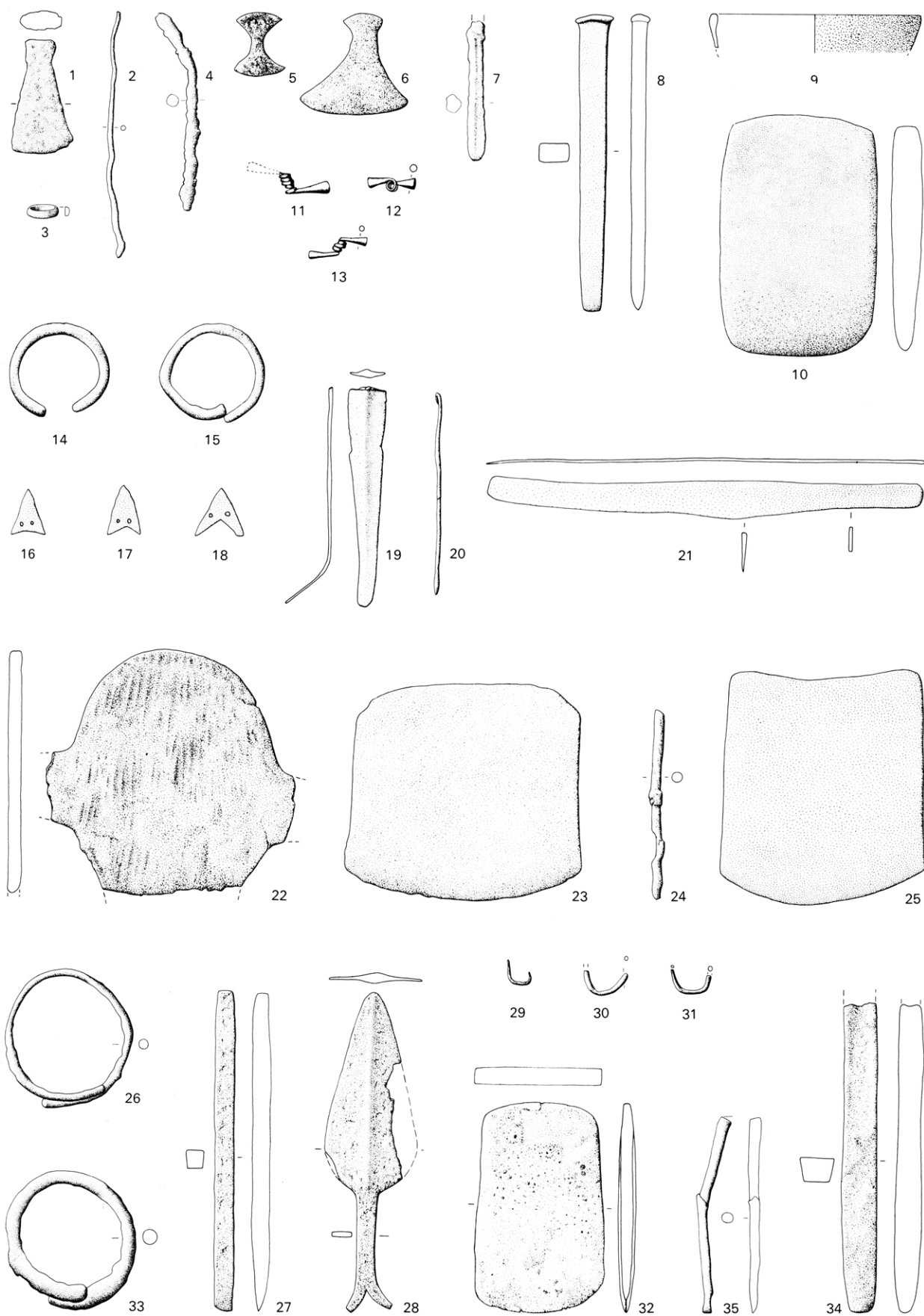
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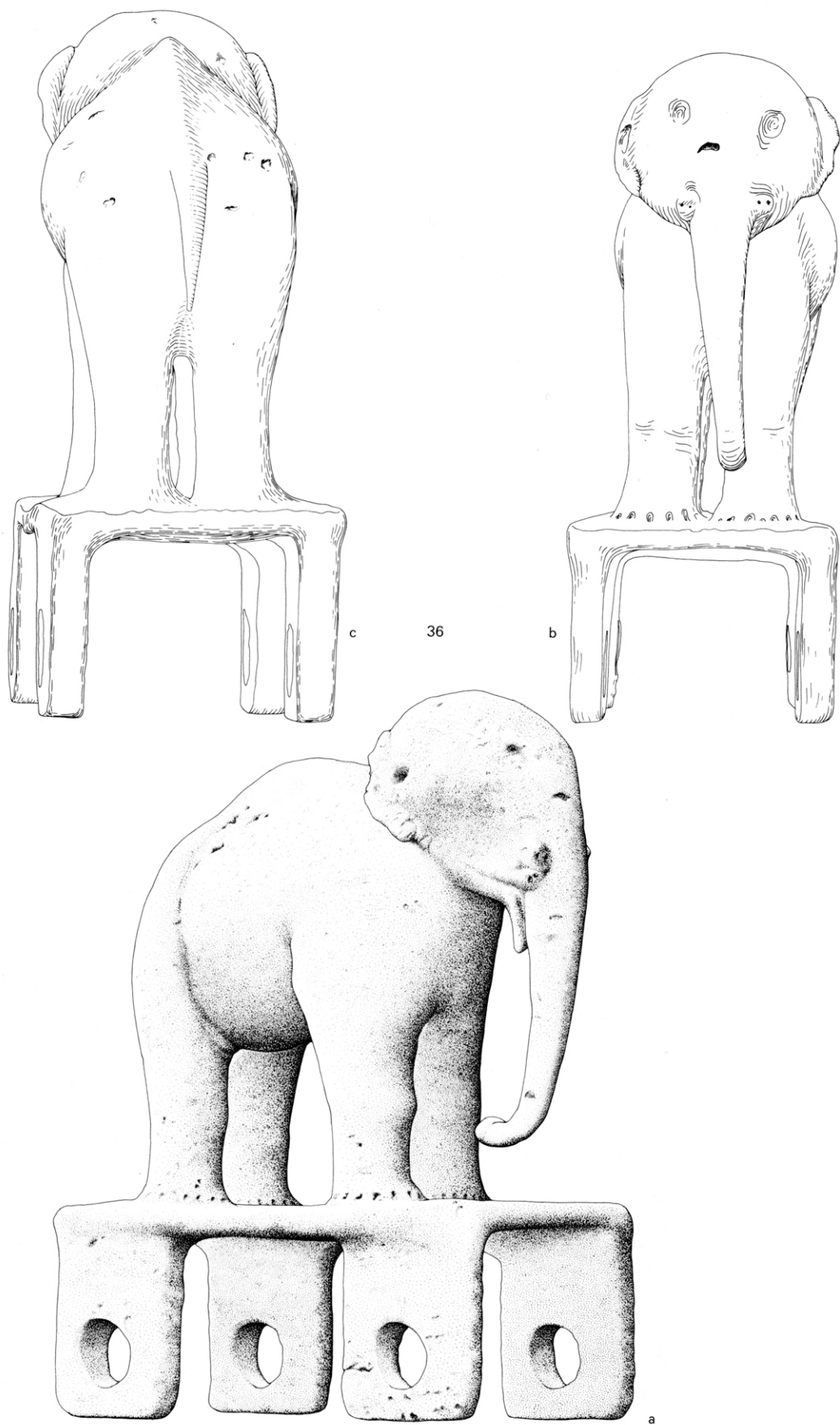
442



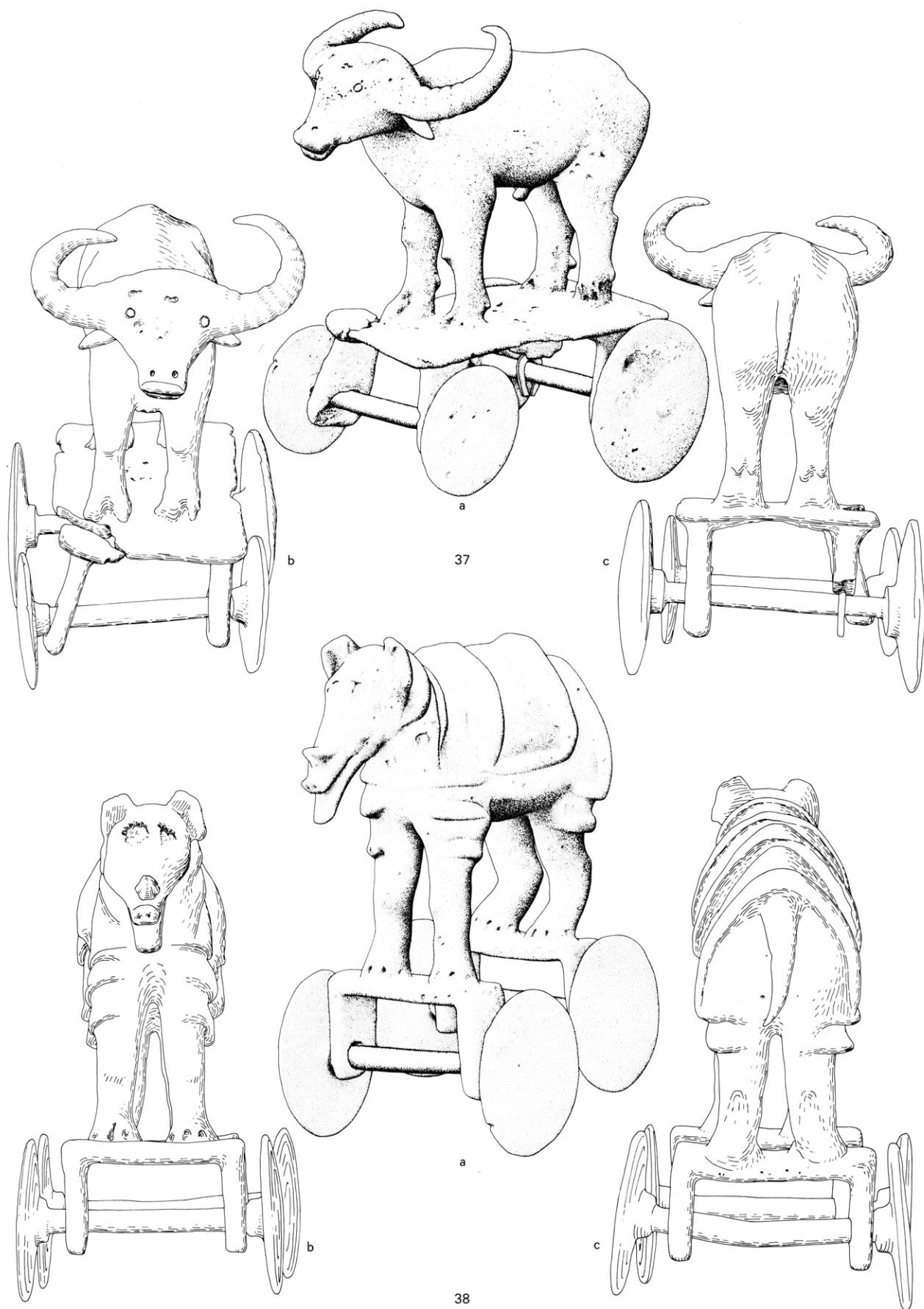
505



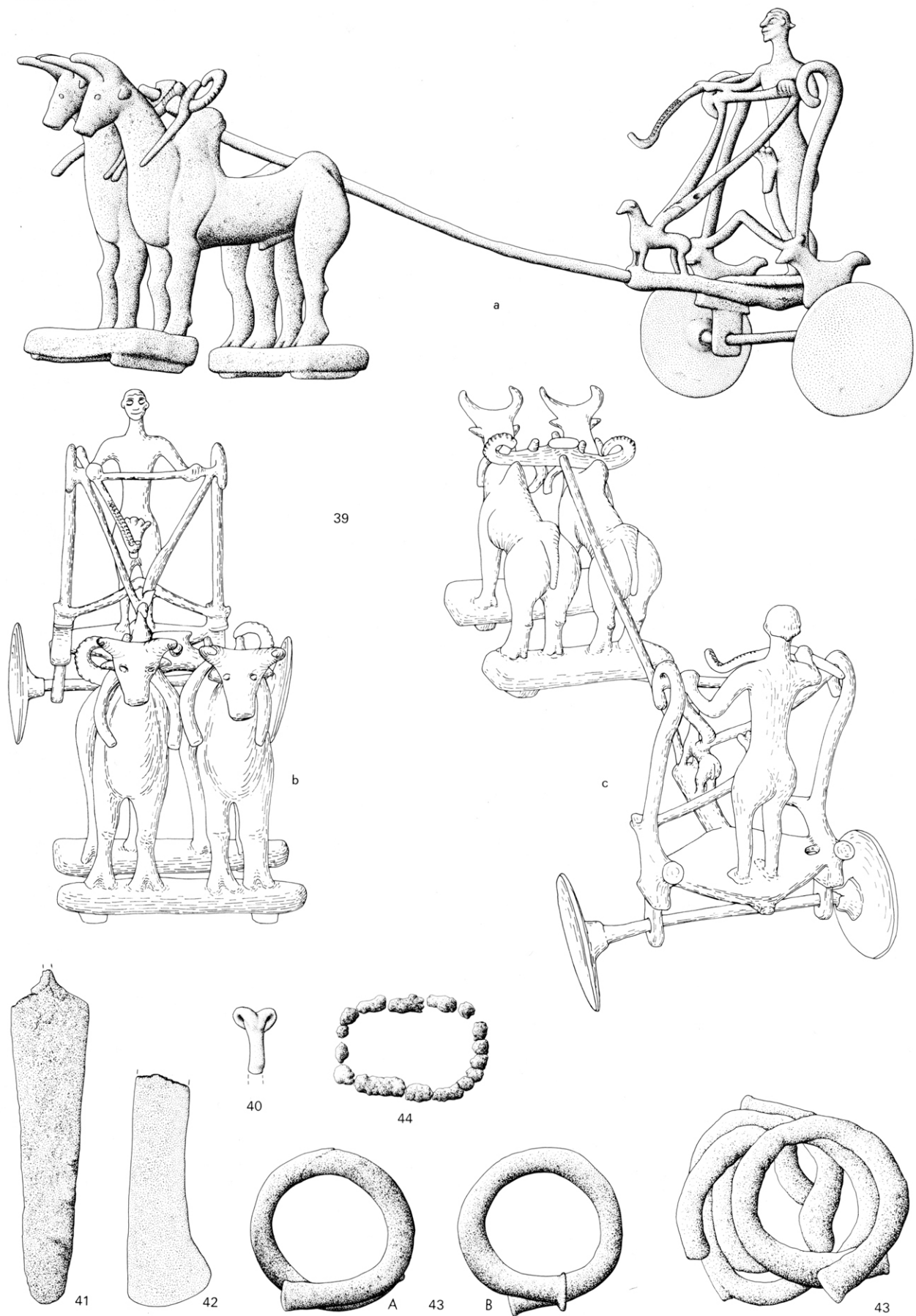
1-4 Brahmagiri; 5,6 Hallur; 7 Maski; 8,9 Piklihal; 10-13 Tekkalakota; 14 Tardal; 15 Vibhutimaddi site; 16-20 Bagor; 21 Langnaji; 22,23 Lothal; 24 Rangpur; 25 Somnath; 26-35 Chandoli. - (1-4 after Wheeler; 5,6 after Gupta; 7 after Thapar; 8,9 after Allchin; 10-13 after Nagaraja Rao; 14, 15 after Sundara; 16-20 after Misra; 21 after Sankalia; 22-24 after Rao; 25 after Nanavati; 26-35 After Deo/Ansari).



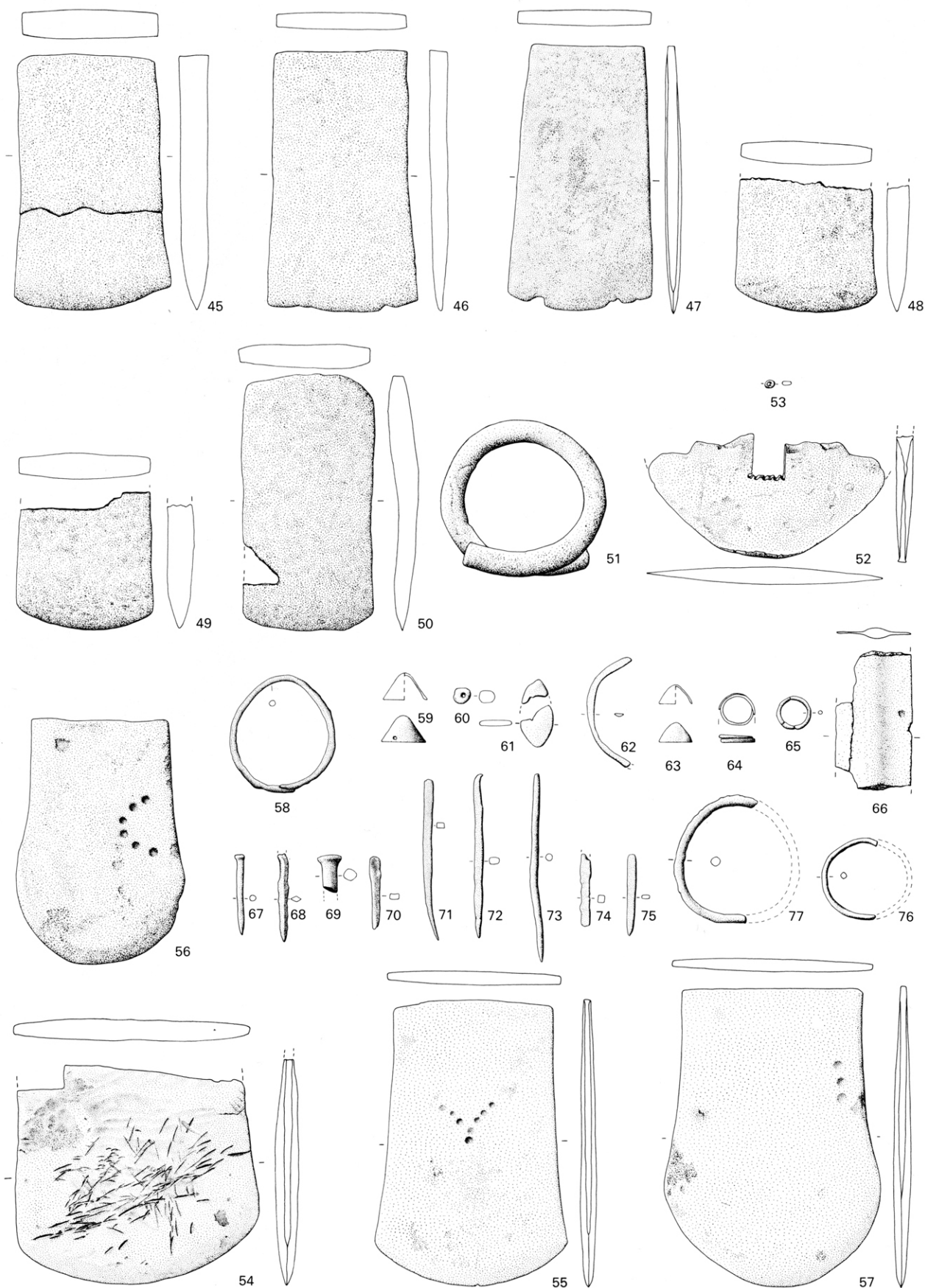
36 Daimabad.  
Scale 1 : 3



37. 38 Daimabad.  
Scale 1 : 3



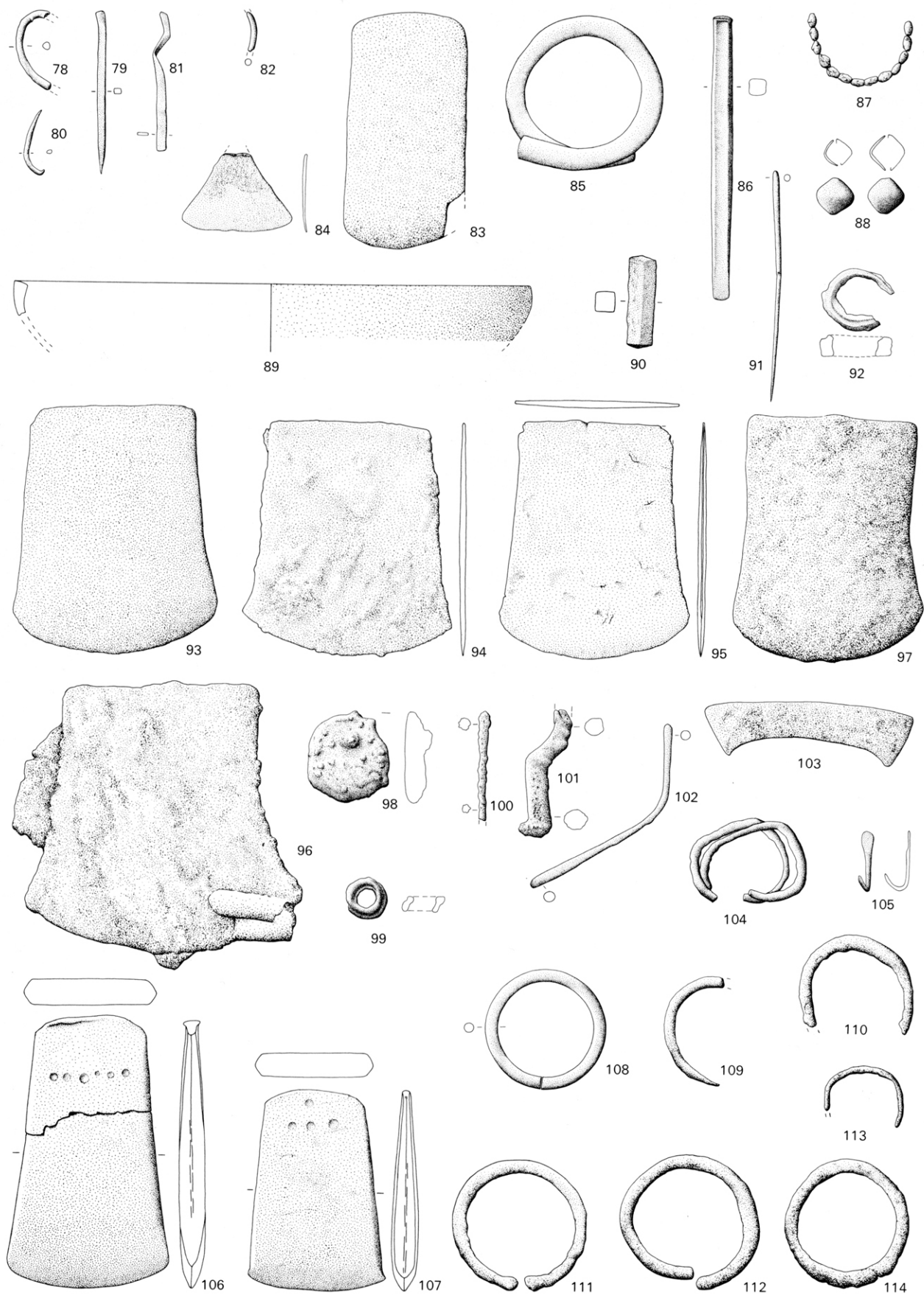
39-42 Daimabad; 43-44 Inamgaon. - (40-42 after Deshpande).  
Scale 1 : 3



45-51 Jorwe; 52-77 Navdatoli. - (45.46.48-51.53.56. 58-77 after Sankalia).

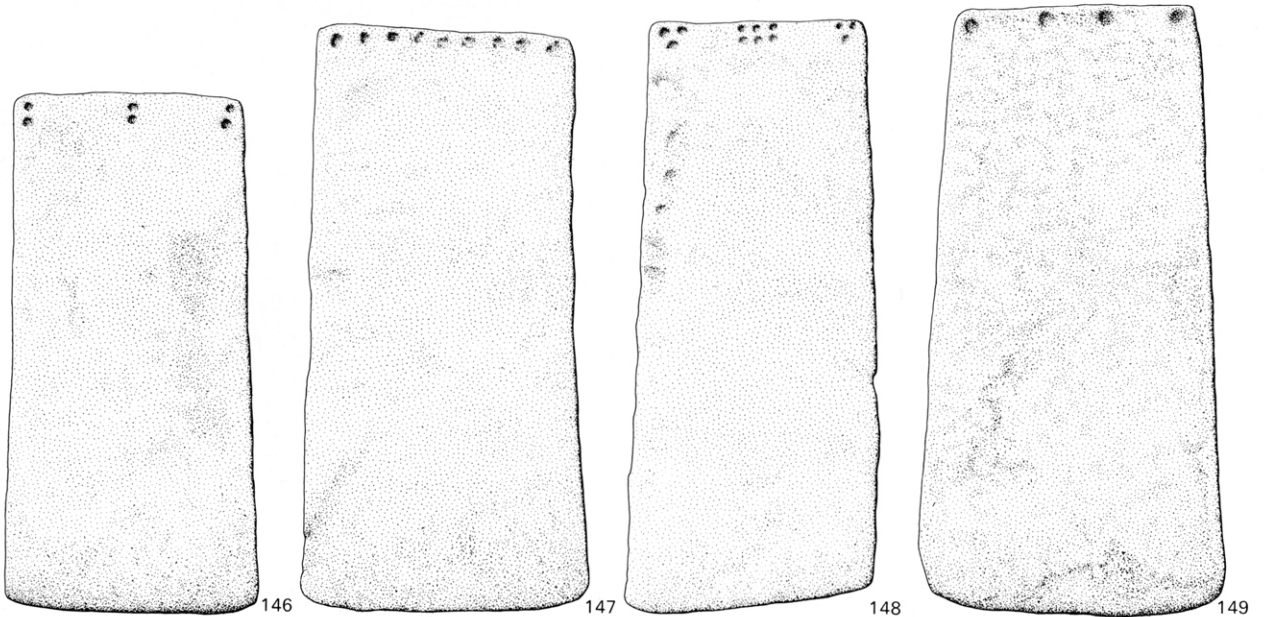
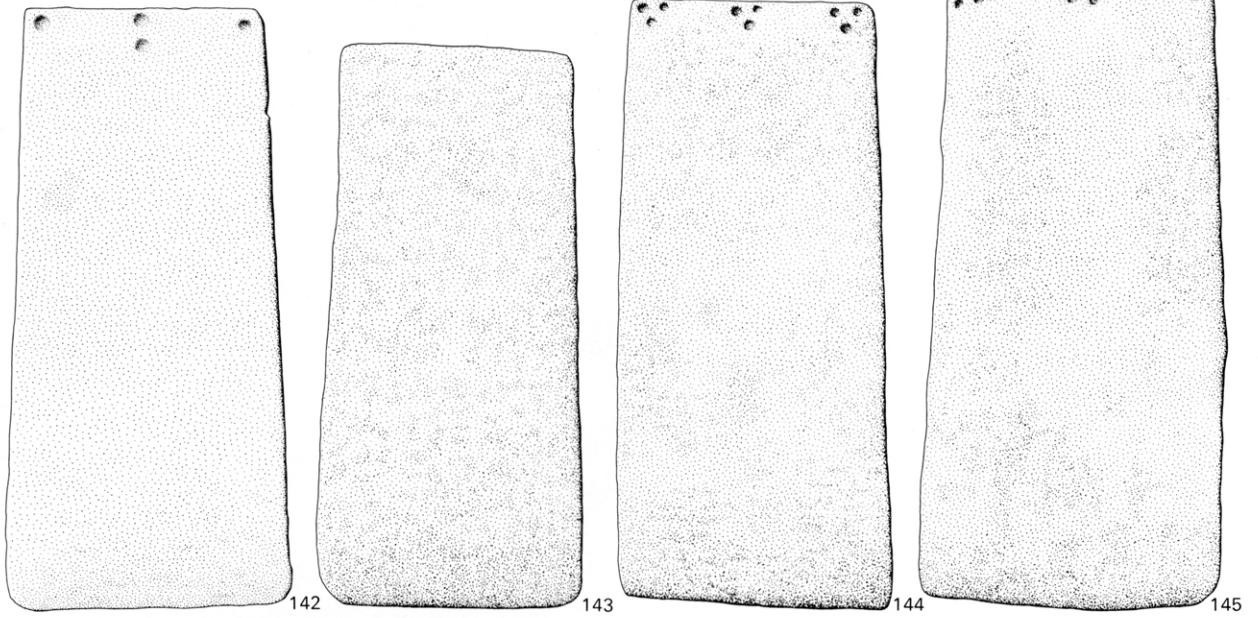
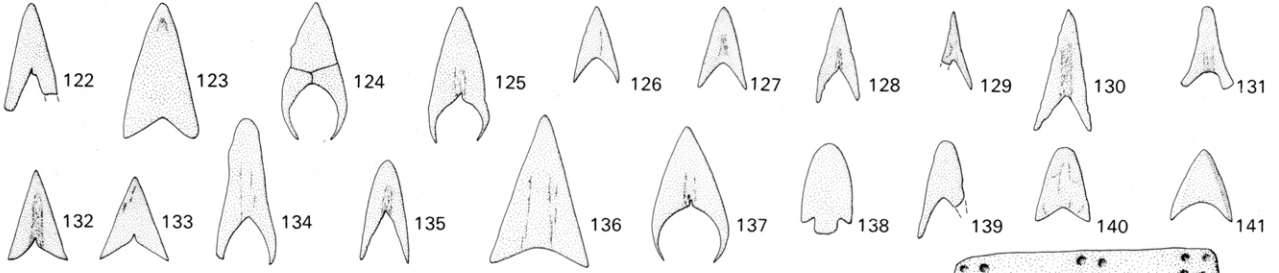
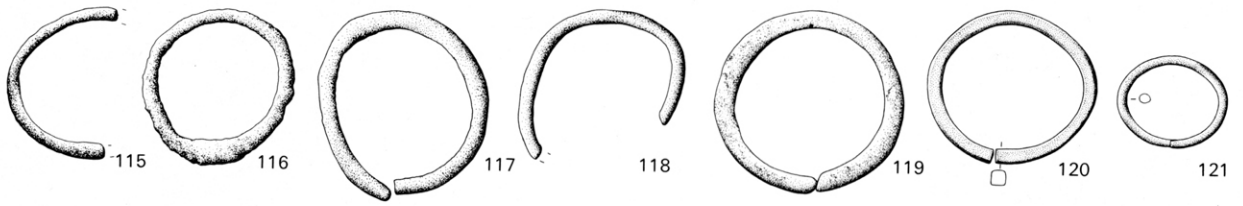
Scale 1 : 3





78-82 Navdatoli; 83-91 Nevasa; 92-104 Ahar; 105 Budha Pushkar Lake Site; 106-114 Kayatha. - (78-82. 84.86.89.90.92-94. 96-104 after Sankalia et al; 83 after Deo/Ansari).

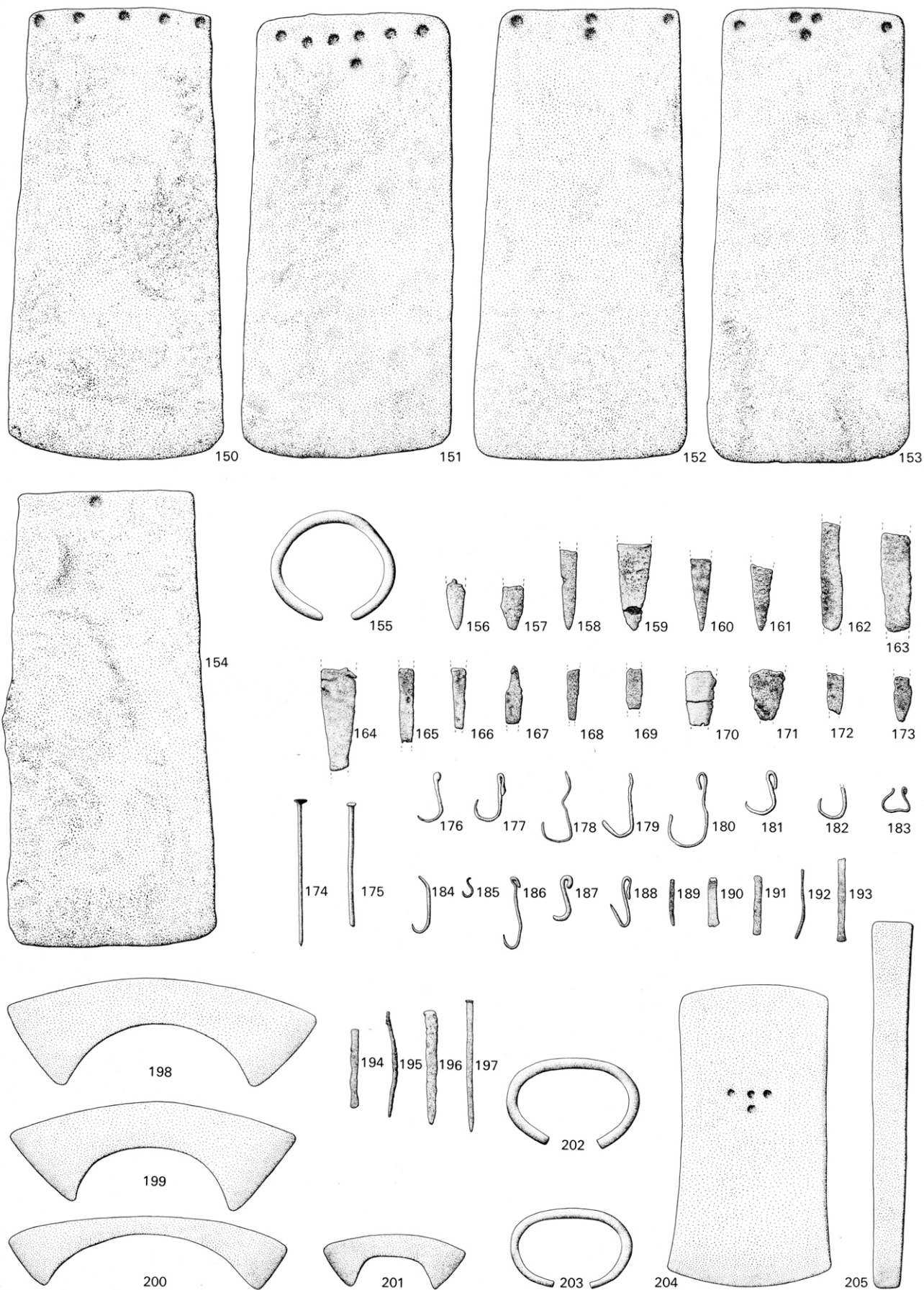
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115-121 Kayatha; 122-149 Ganeshwar. - (115-119 after Ansari/Dhavalikar; 122-149 after Agrawal/Kumar).

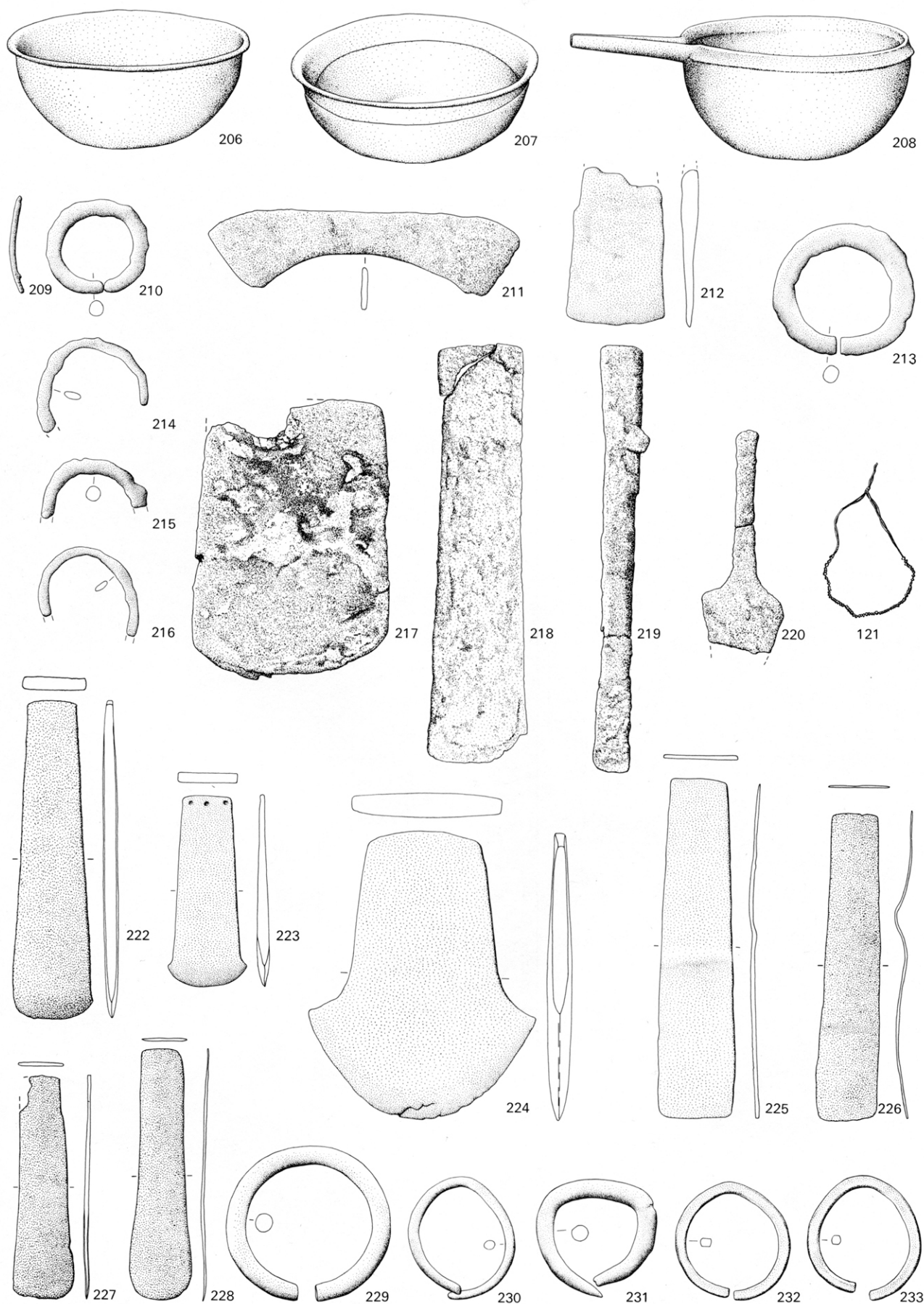
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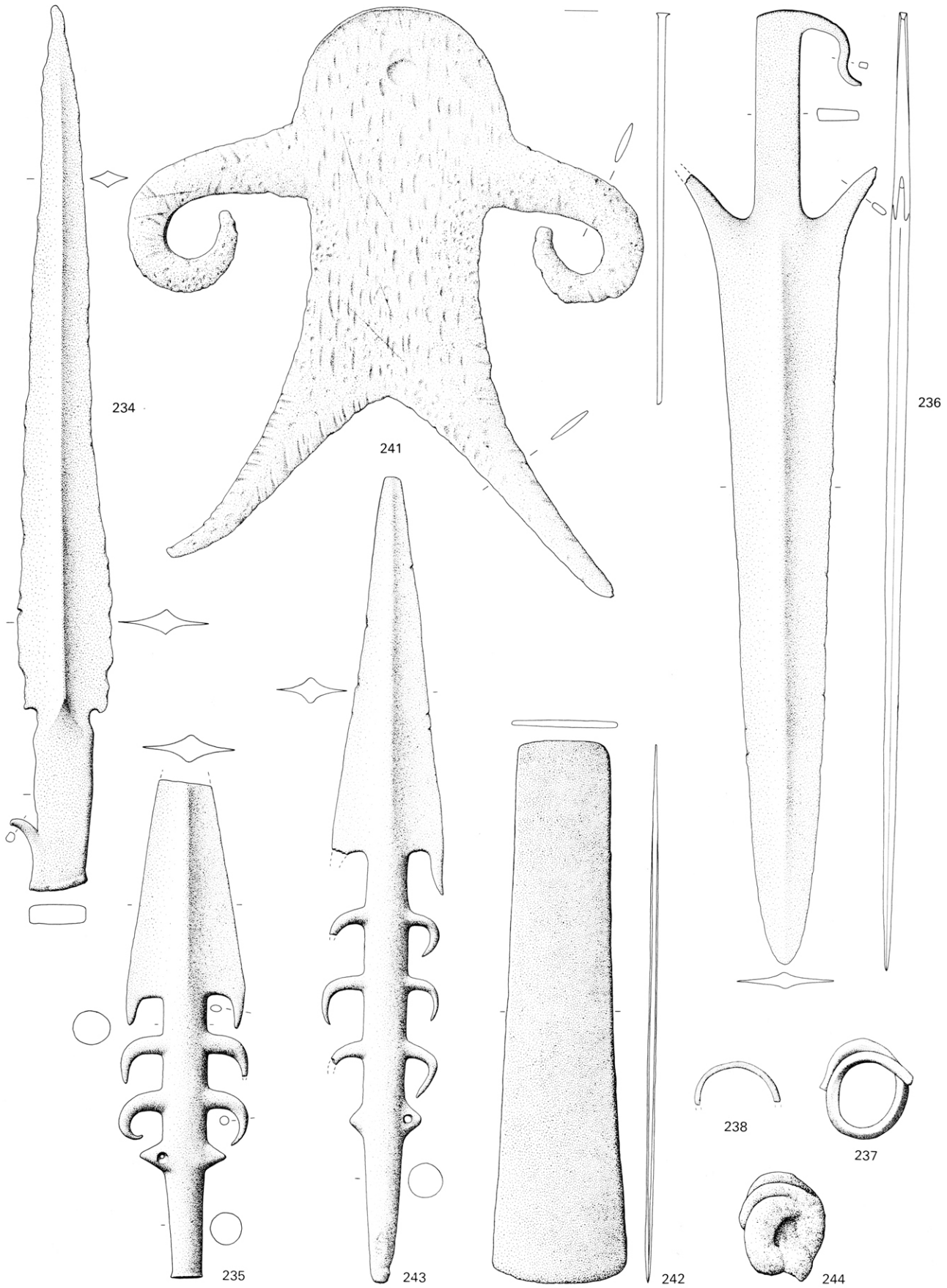
150-197 Ganeshwar; 198-205 Kurada. - (all after Agrawal).

Scale 1 : 3



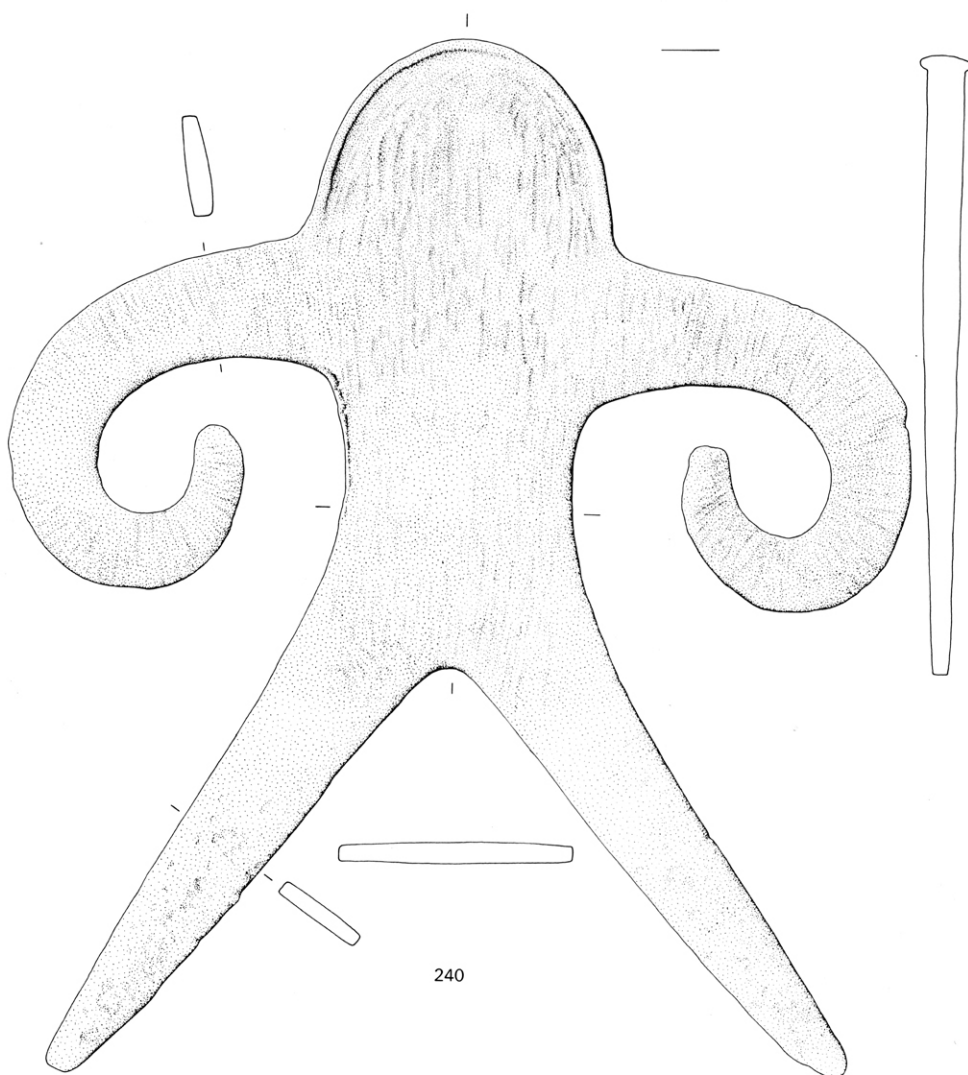
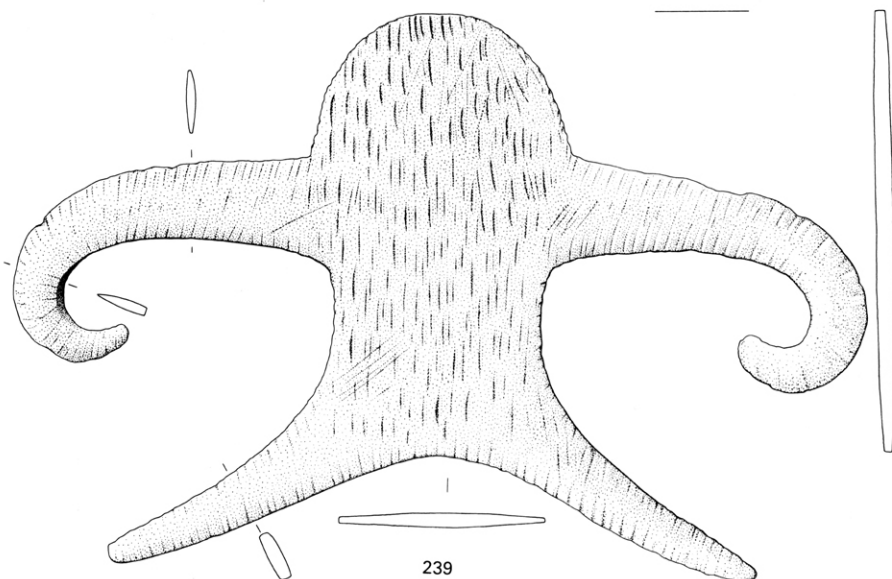
206–208 Kurada; 209–220 Mitathal; 221 Sanghol; 222–233 Bahadarabad. – (206–208 after Agrawal; 209–220 after Suraj Bhan; 221 after Sharma).

Scale 1 : 3

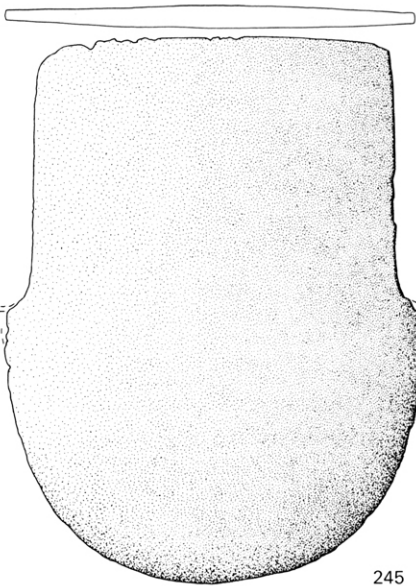


234 Bahadarabad; 235.236 Baharia; 237.238 Bargaon; 241-243 Bisauli; 244 Chirand. (237.238 after Deshpande; 244 after Verma)

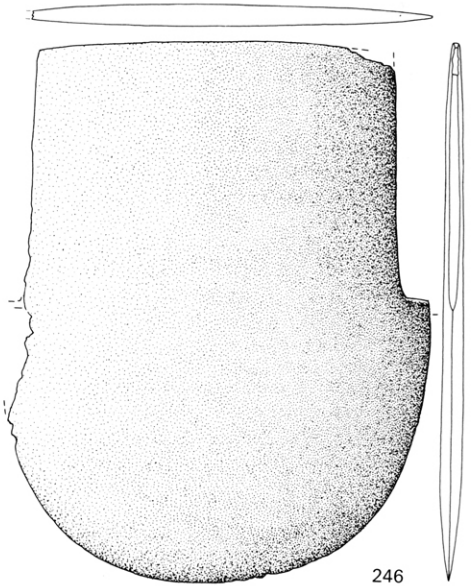
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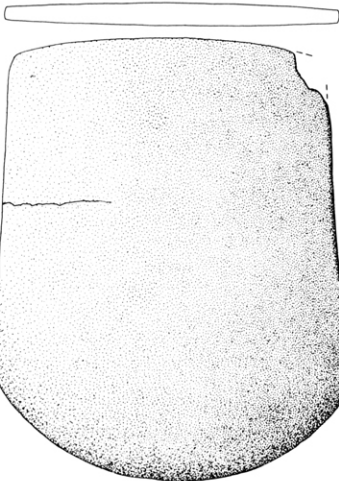
239. 240 Bisauli.  
Scale 1 : 3



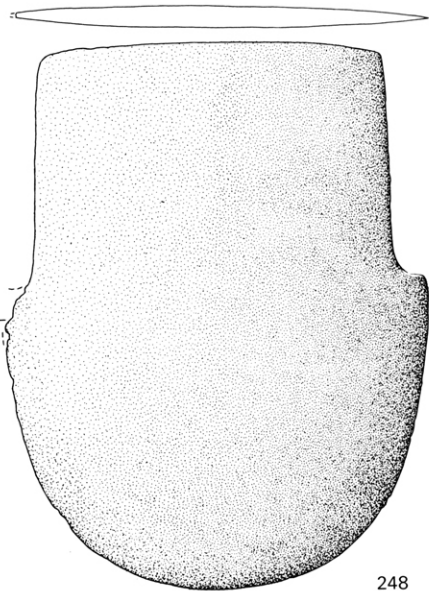
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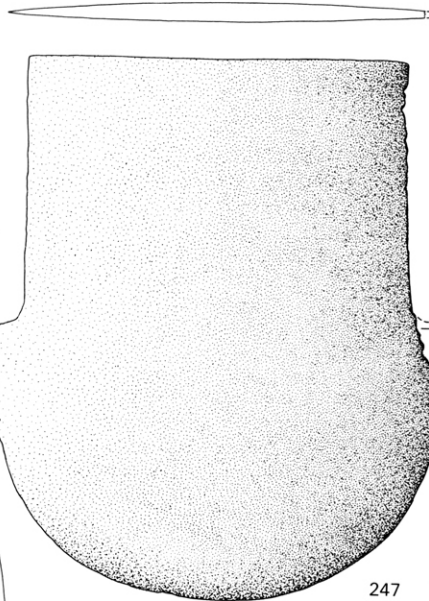
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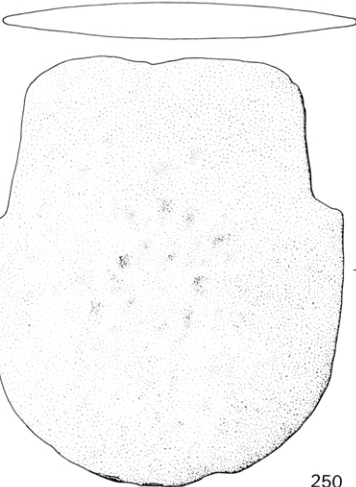
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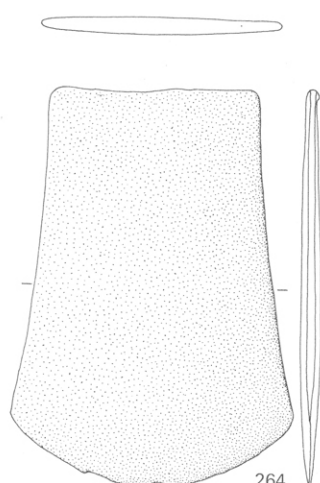
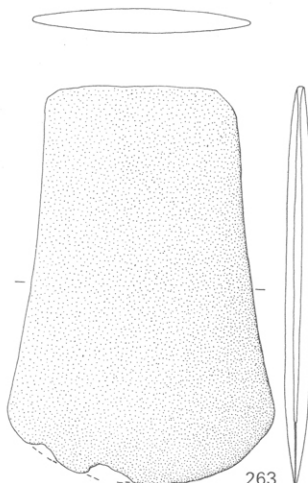
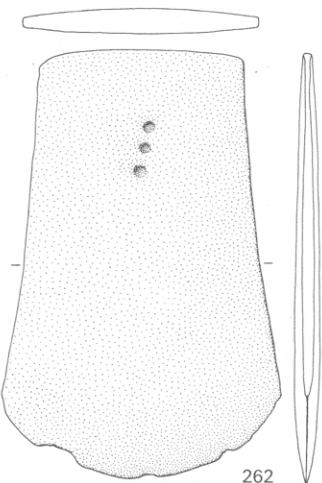
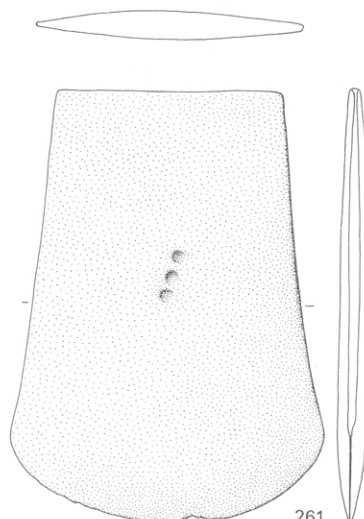
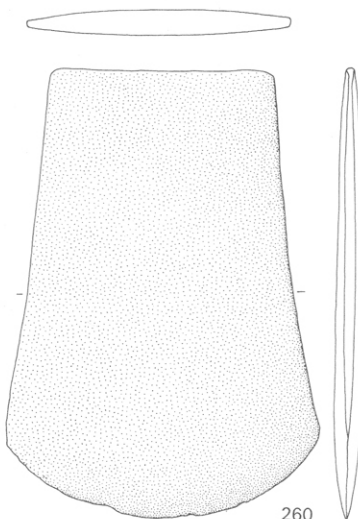
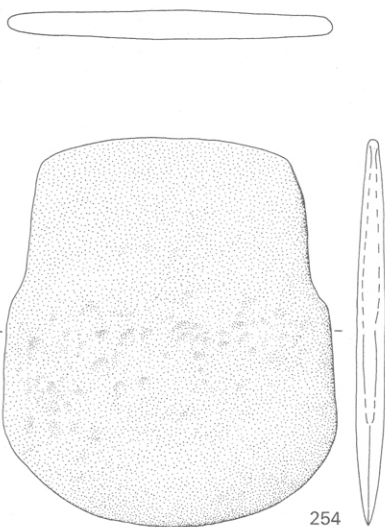
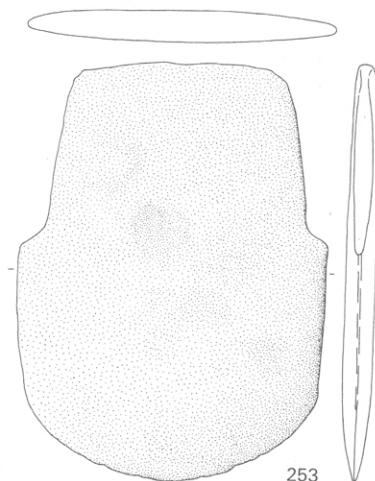
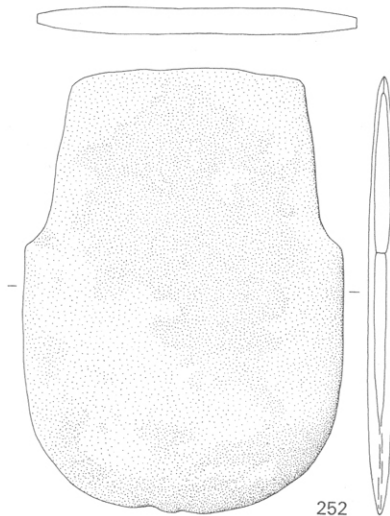
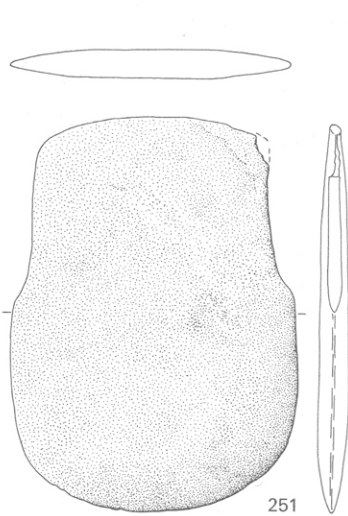
247



250

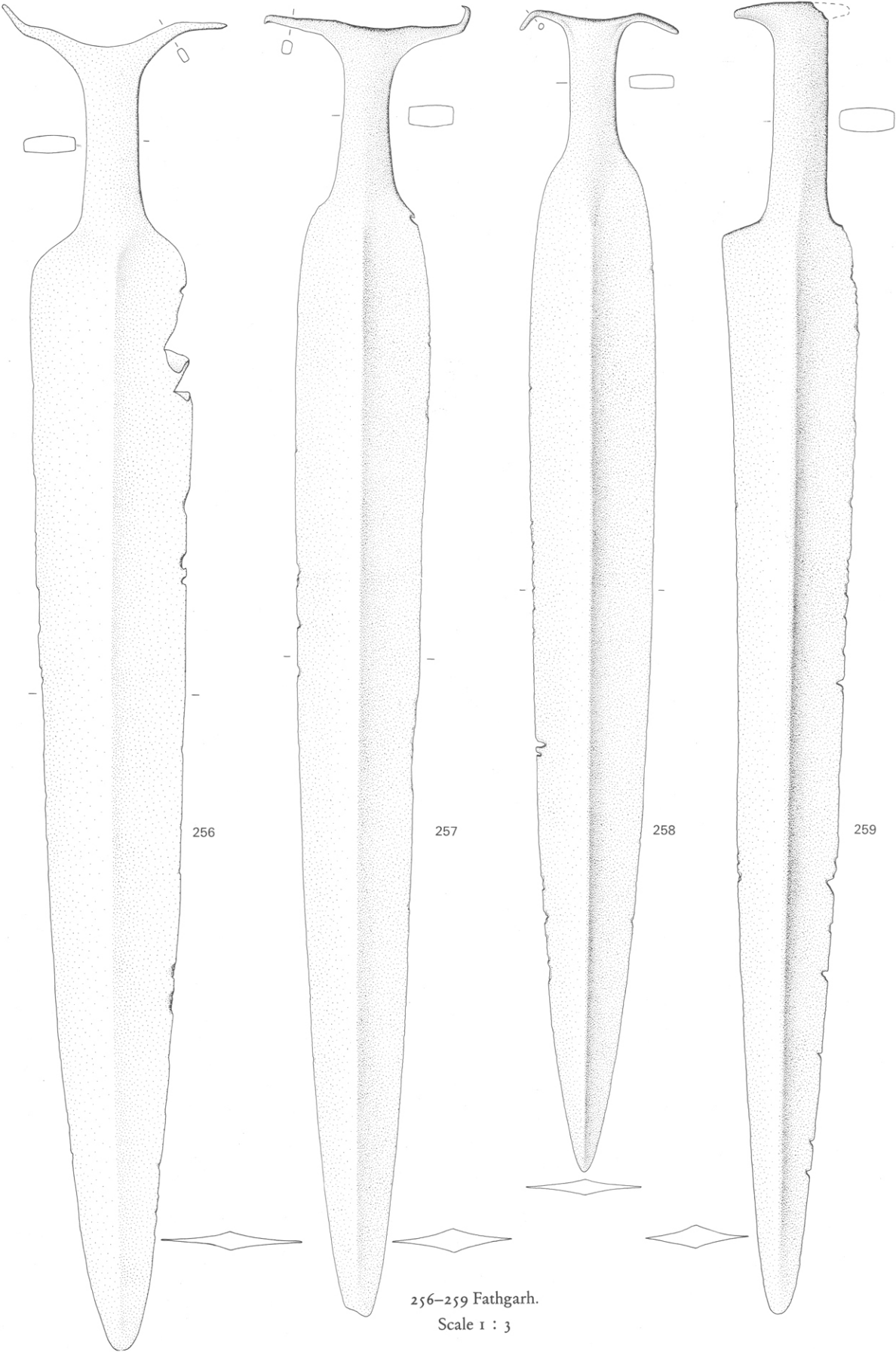
245-249 Dhaka; 250 Etawah.  
Scale 1 : 3

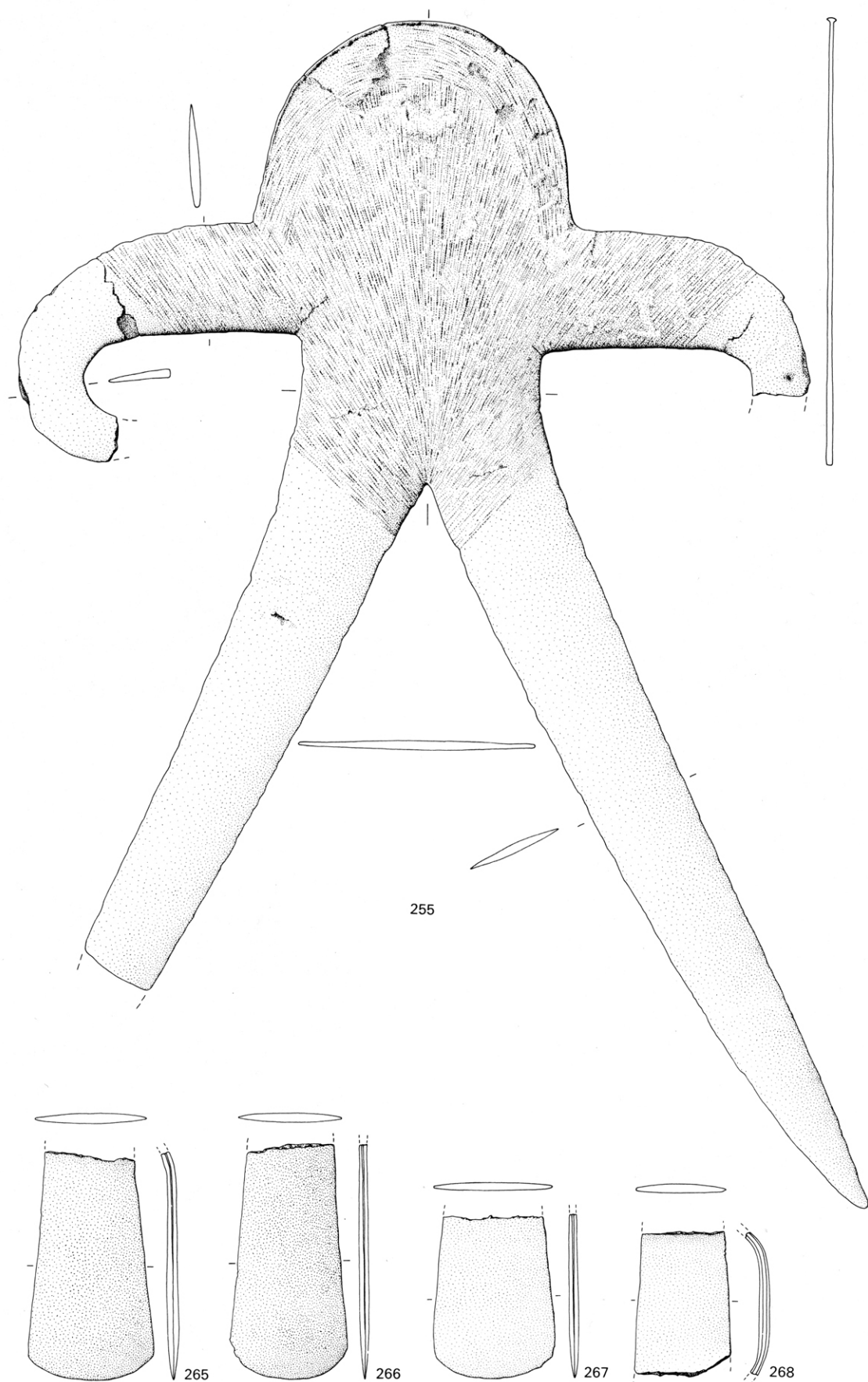




251-254 Etawah; 260-264 Gandhali.

Scale 1 : 3

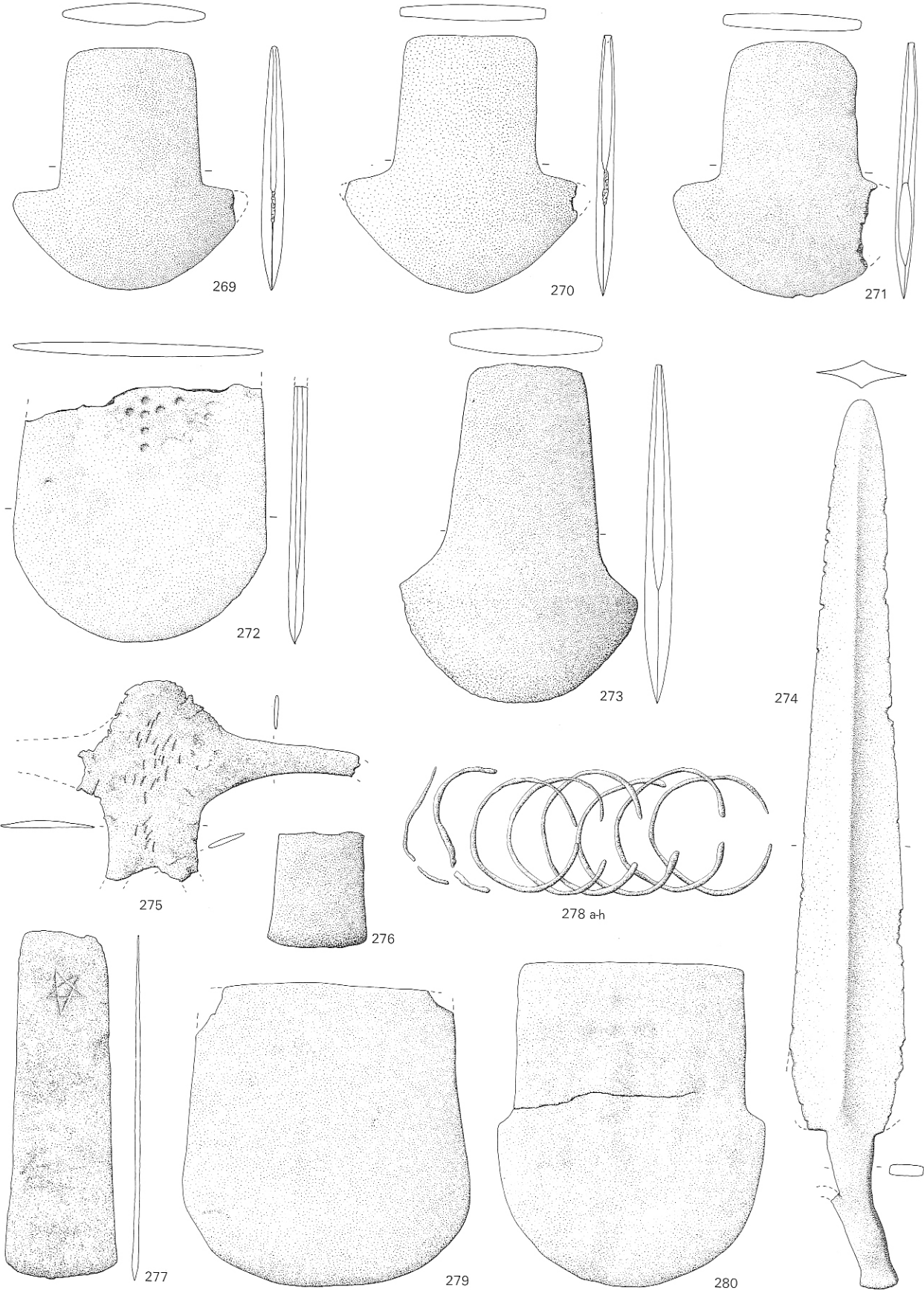




255 Fathgarh; 265-268 Gandhauri.

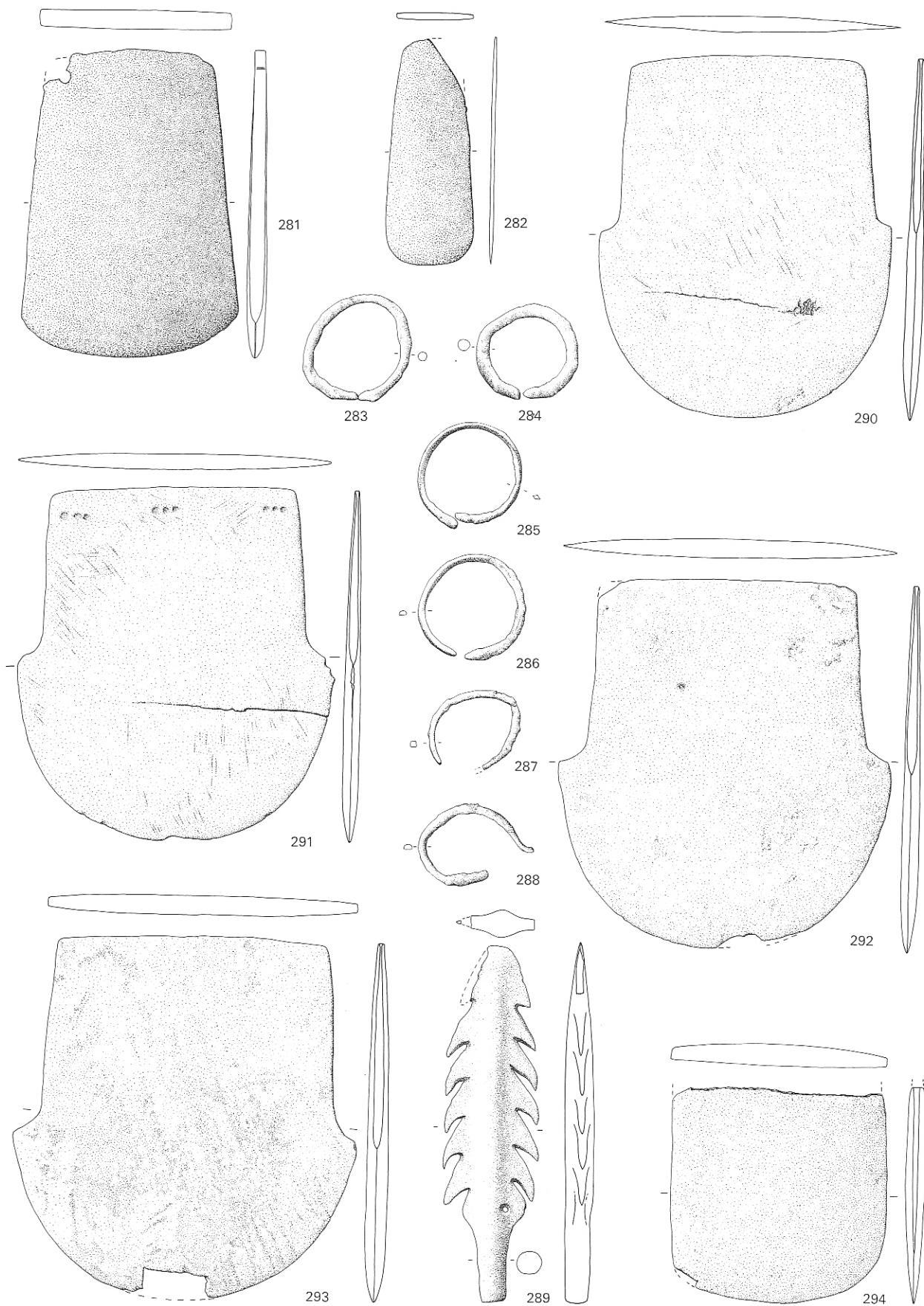
Scale 1 : 3





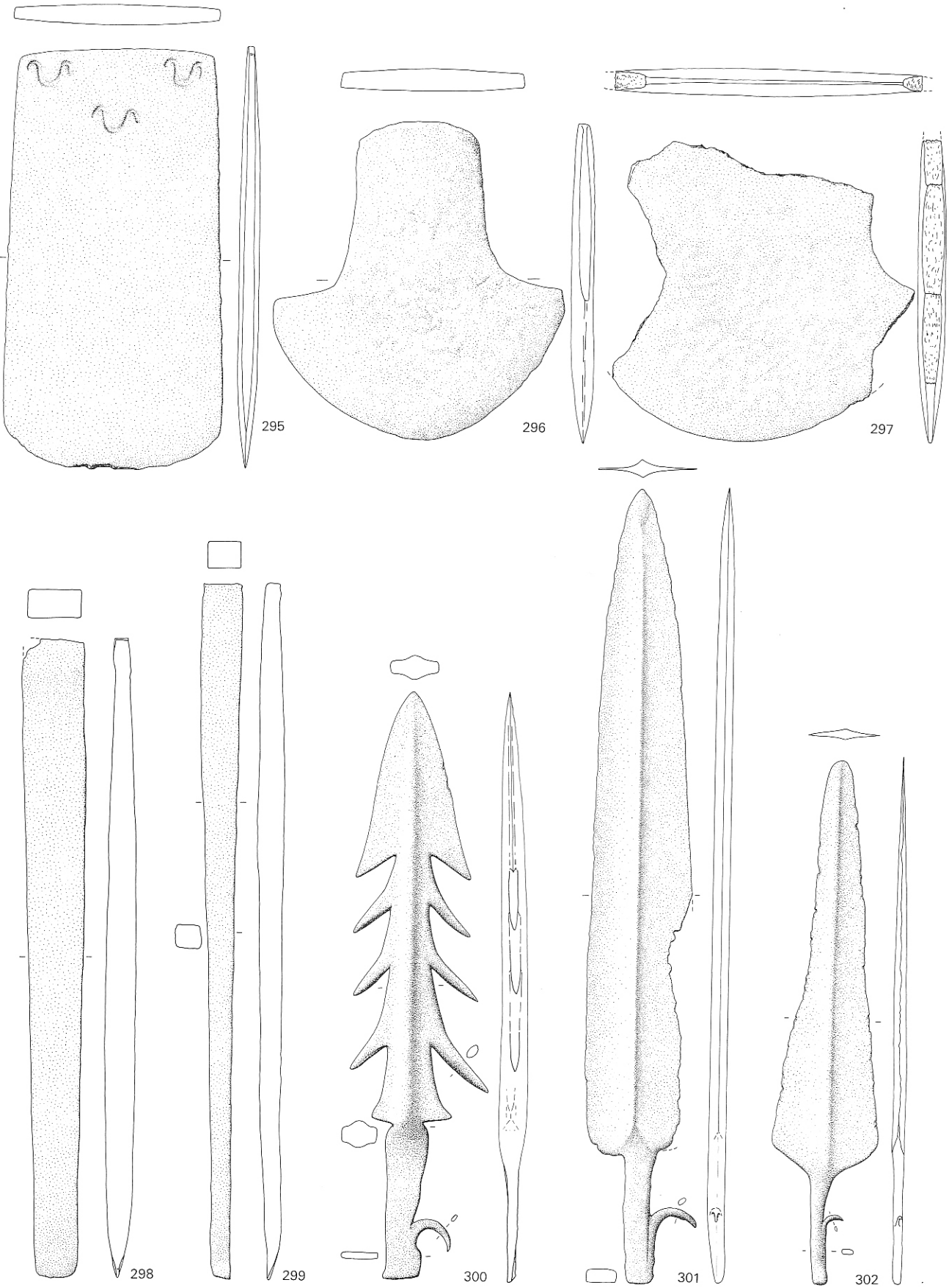
269-271 Gandhauri; 272-274 Kheri Manpur; 275-278 Kiratpur; 279,280 Madnapur. - (275-278 after Gaur; 279,280 after Misra).

Scale 1 : 3

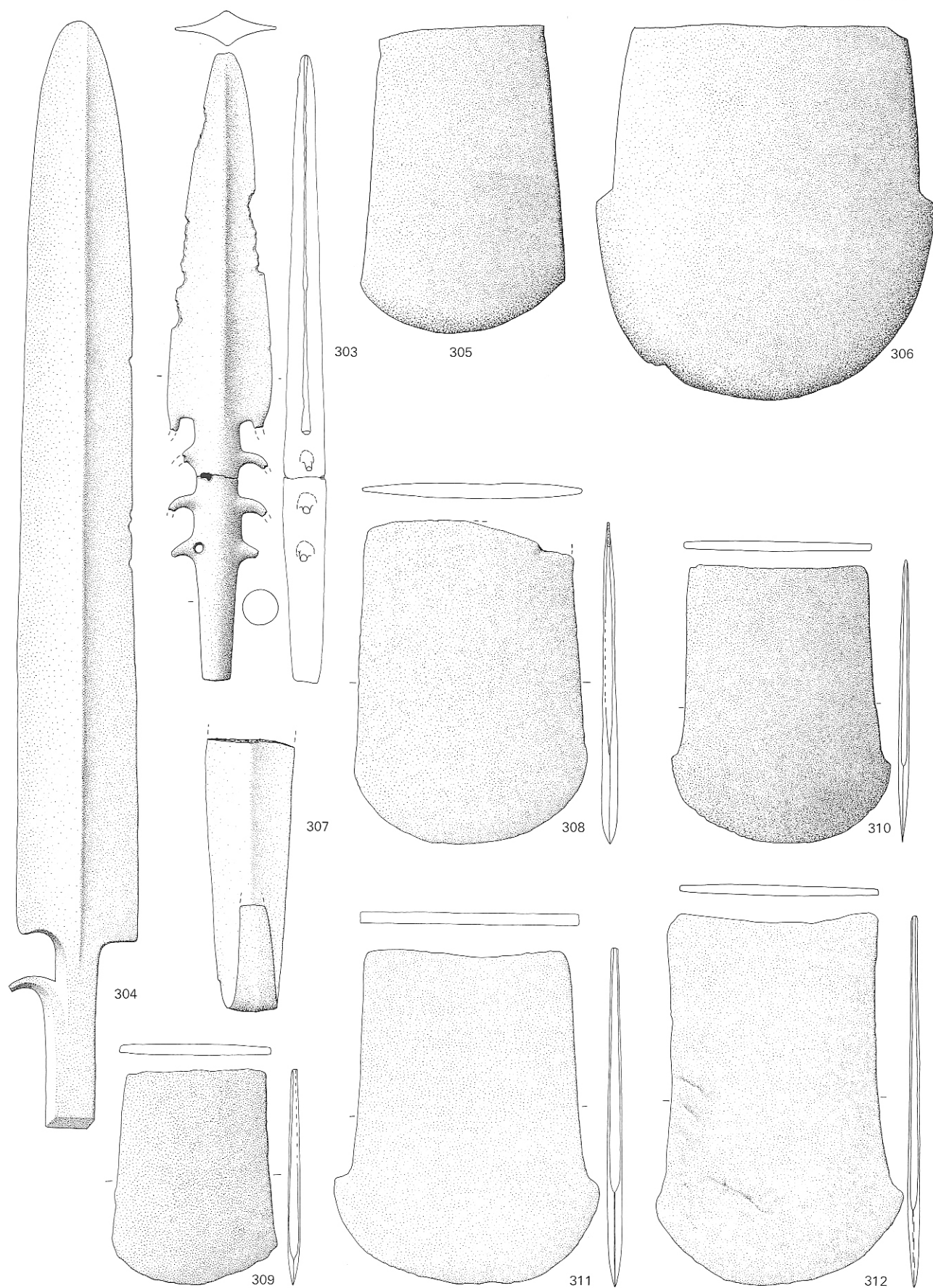


281-289 Mainpuri; 290-293 Nakrahiya; 294 Nasirpur.

Scale 1 : 3

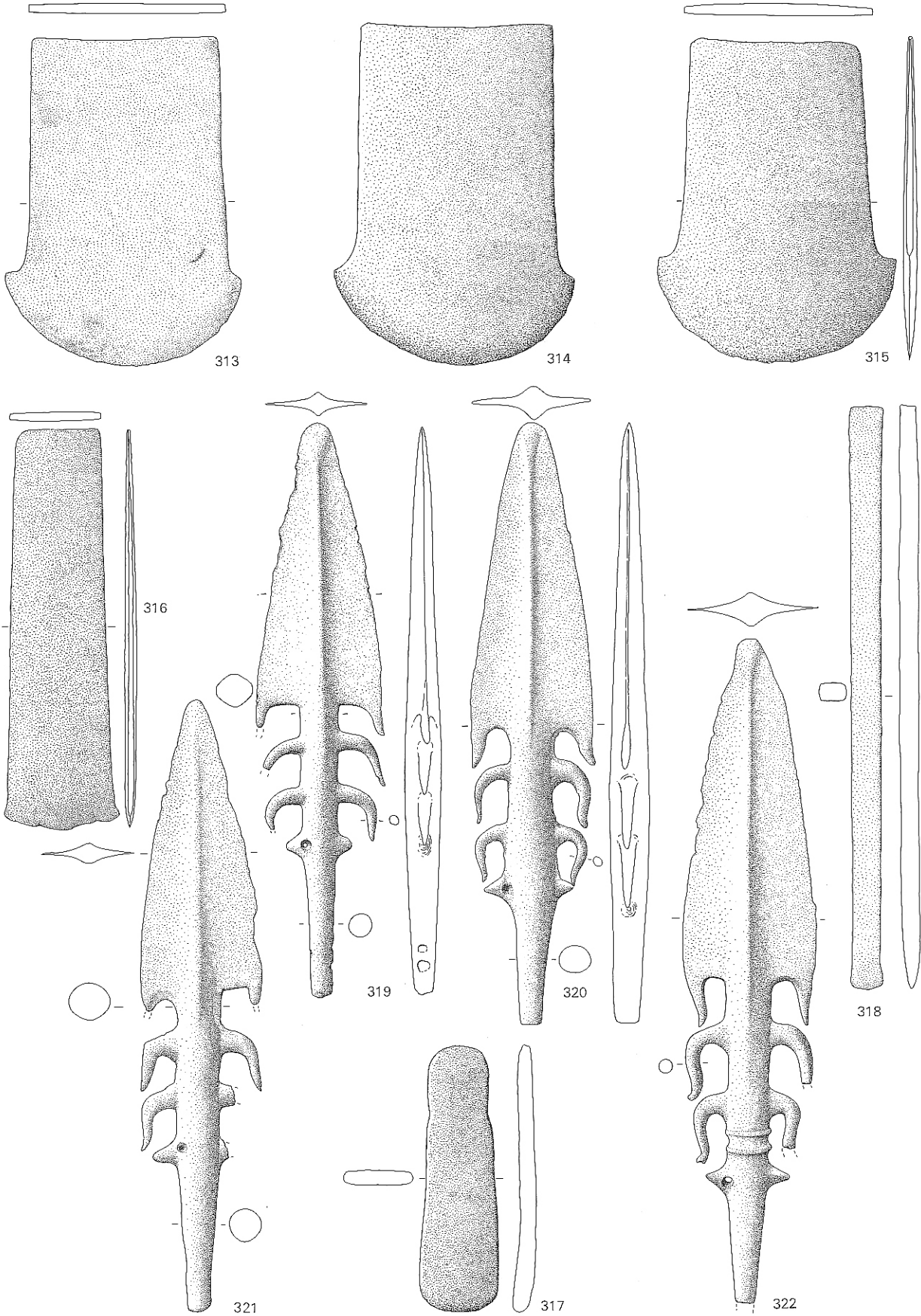


295-302 Nasirpur.  
Scale 1 : 3



303.304 Niorai; 305-307 Pariar; 308-312 Rajpur Parsu. - (304 after Elliot; 305-307 after Smith).

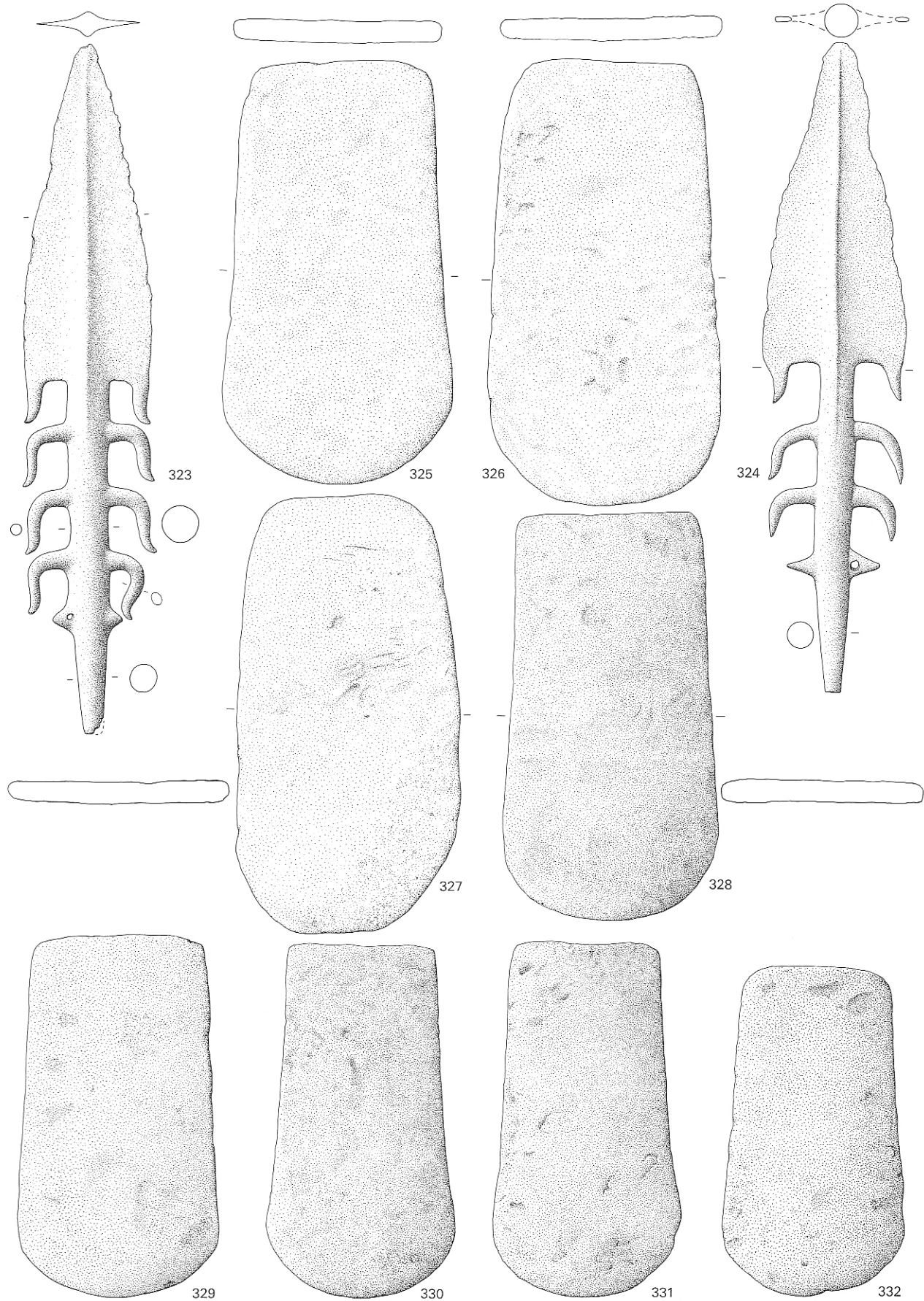
Scale 1 : 3



313-314, 316-322 Rajpur Parsu; 315 Prov. unknown. - (314 after Smith).

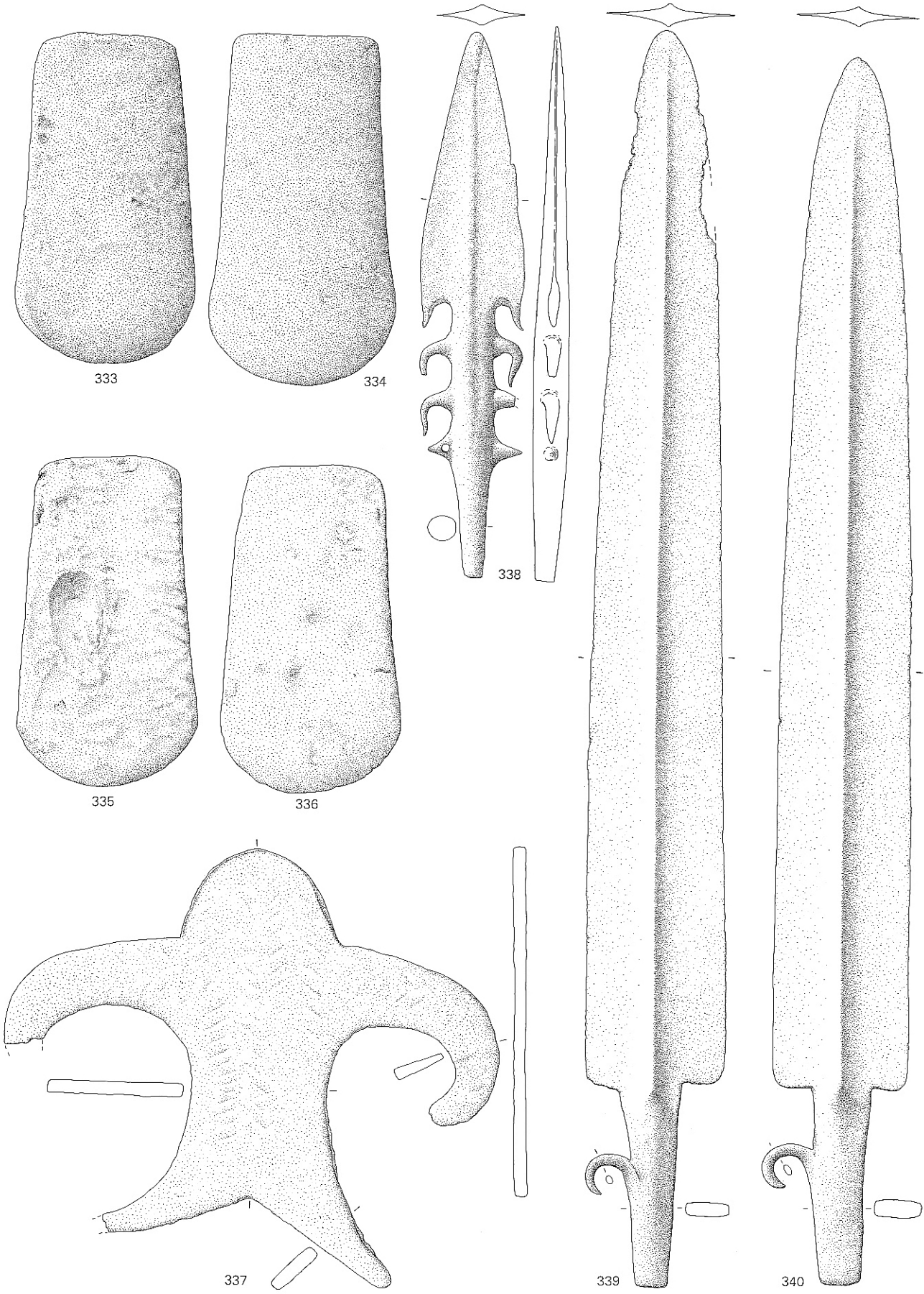
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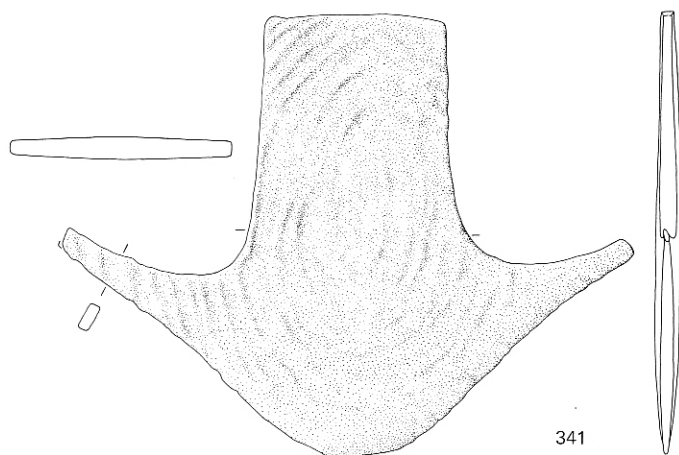


323.324 Rajpur Parsu; 325-332 Resgavaon.

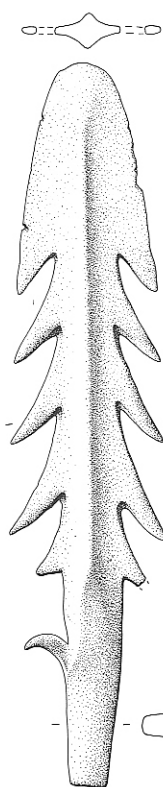
Scale 1 : 3



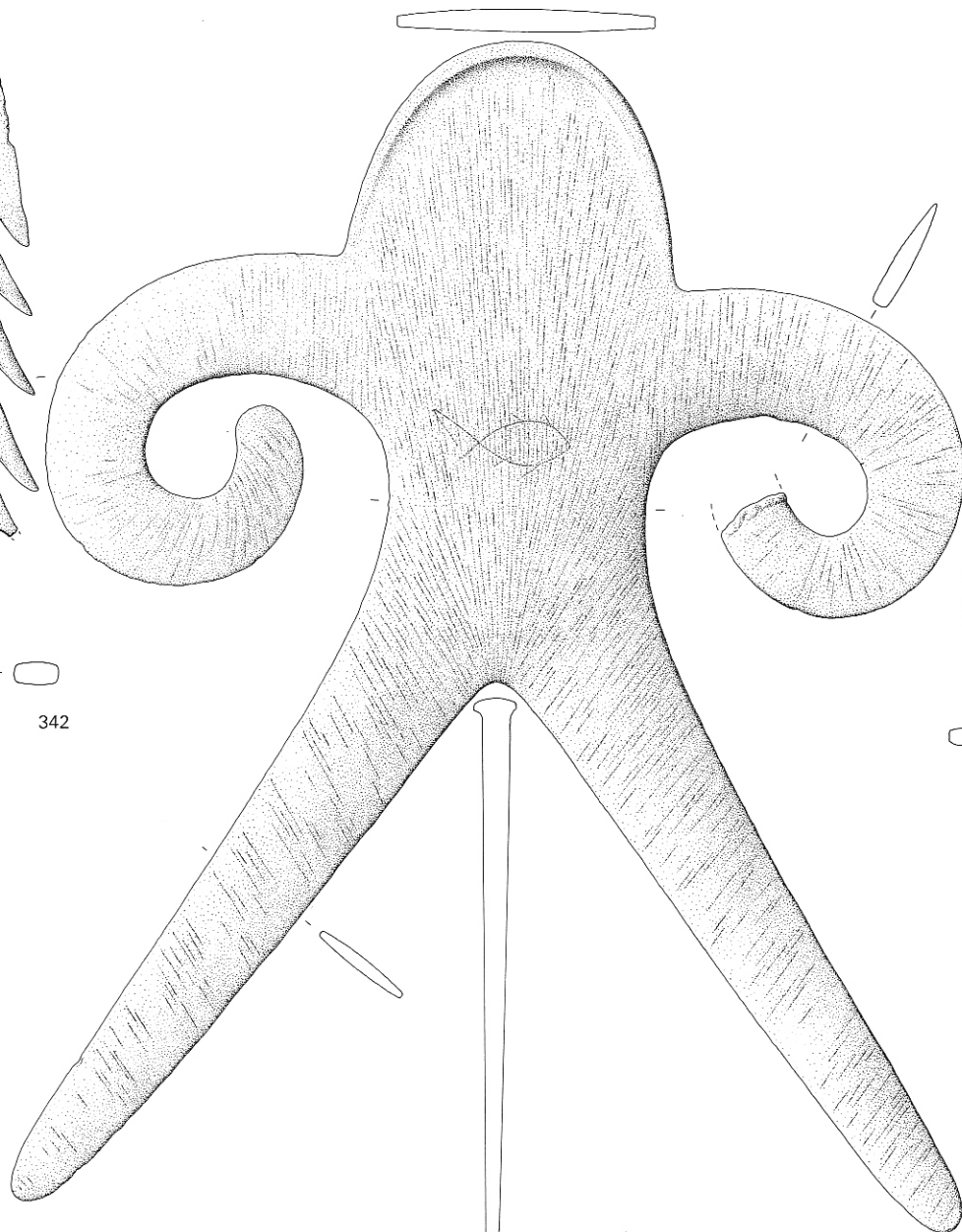
333-336 Resgavaon; 337-340 Saipai.  
Scale 1 : 3



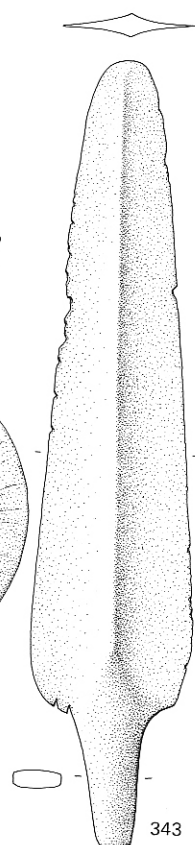
341



342

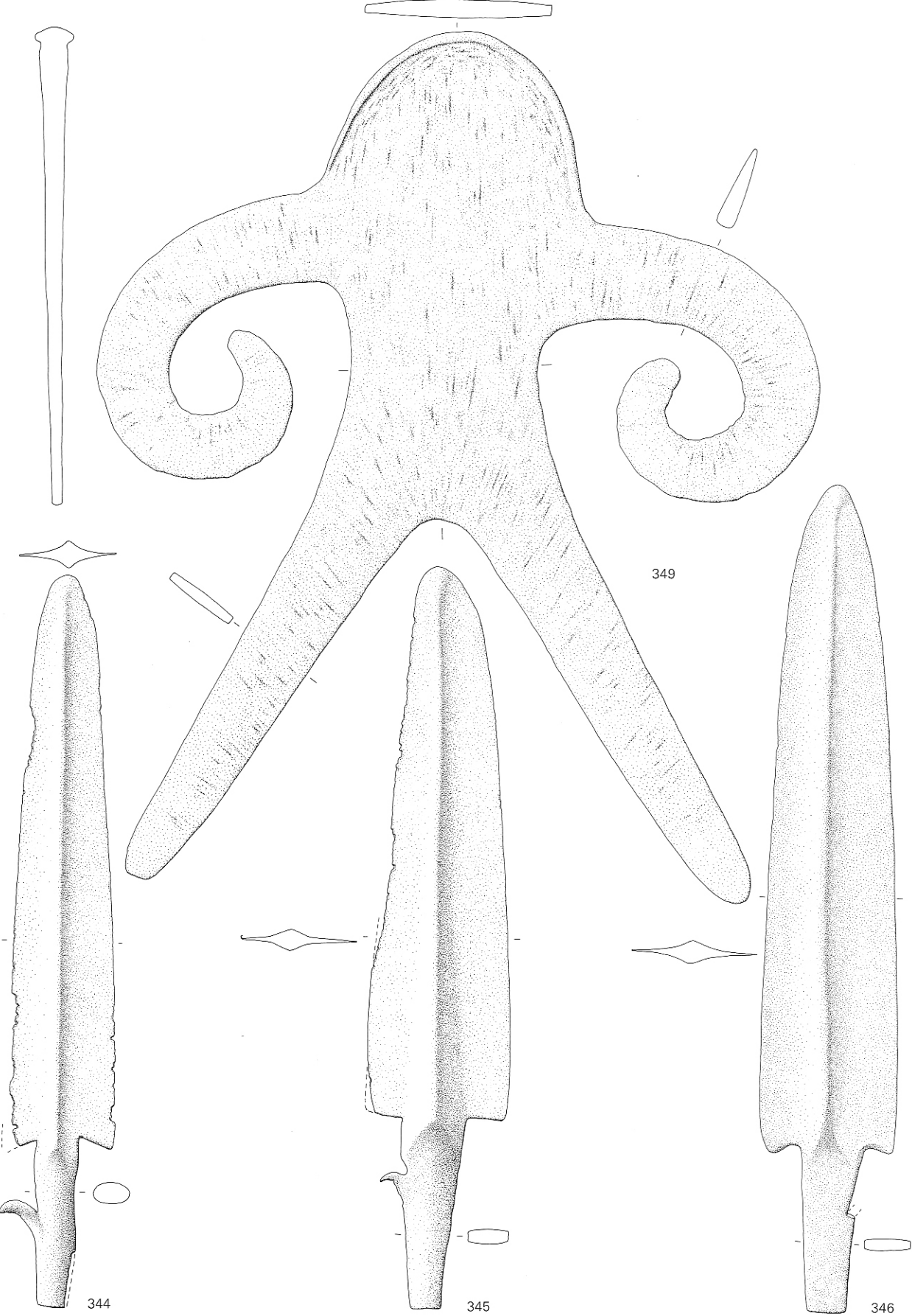


348

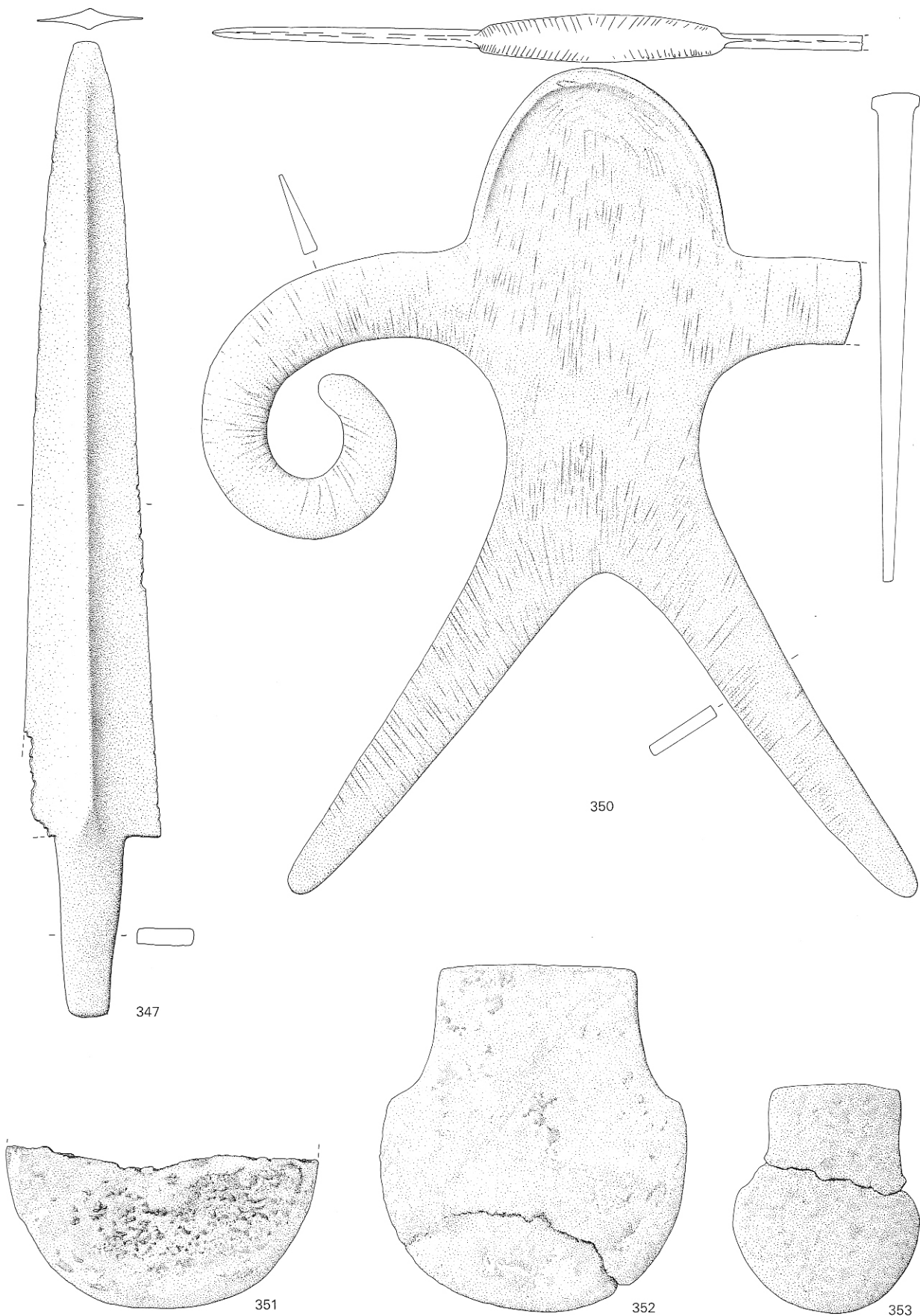


343

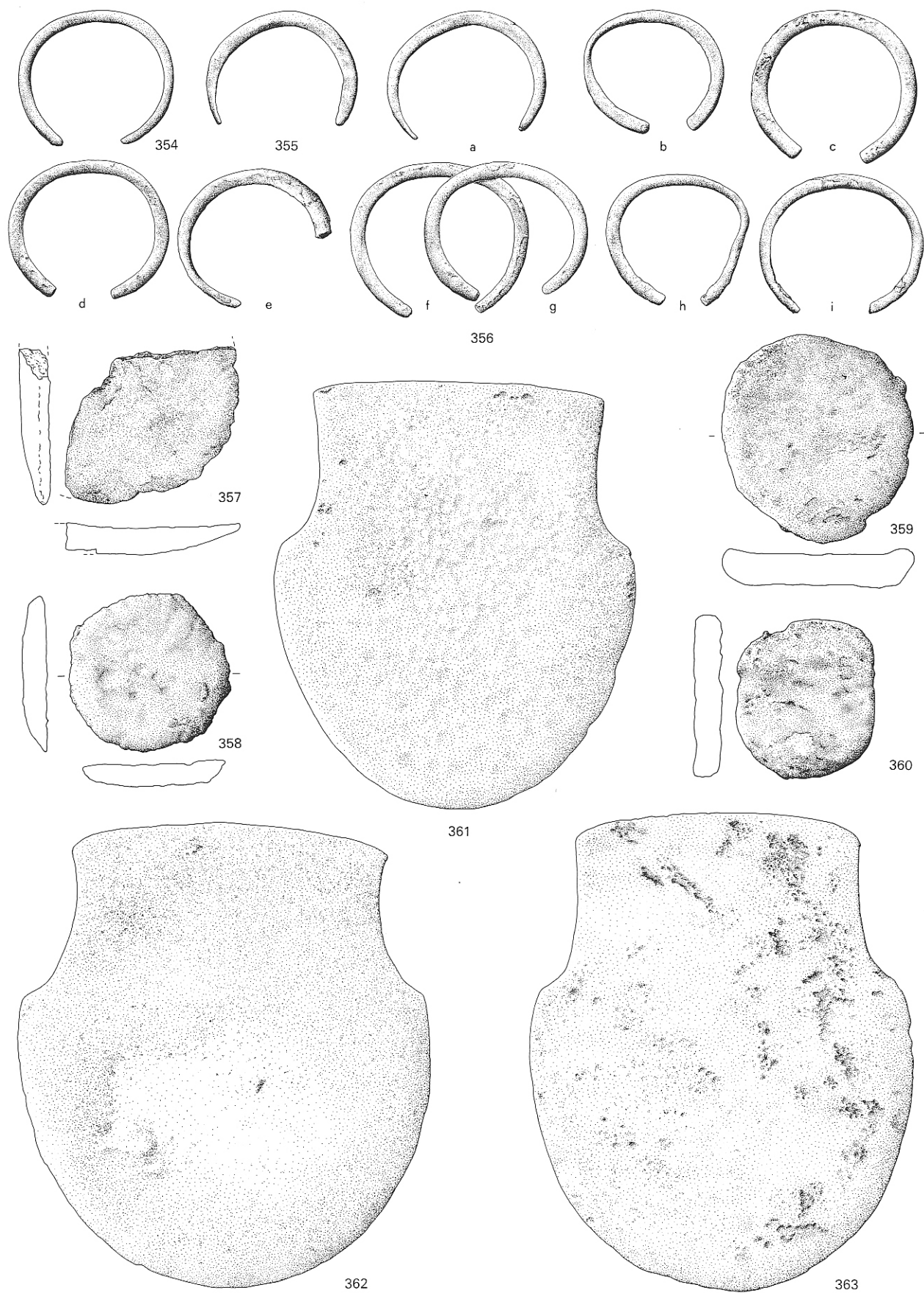




344-346 Sarthauli; 349 Sheorajpur.  
Scale 1 : 3

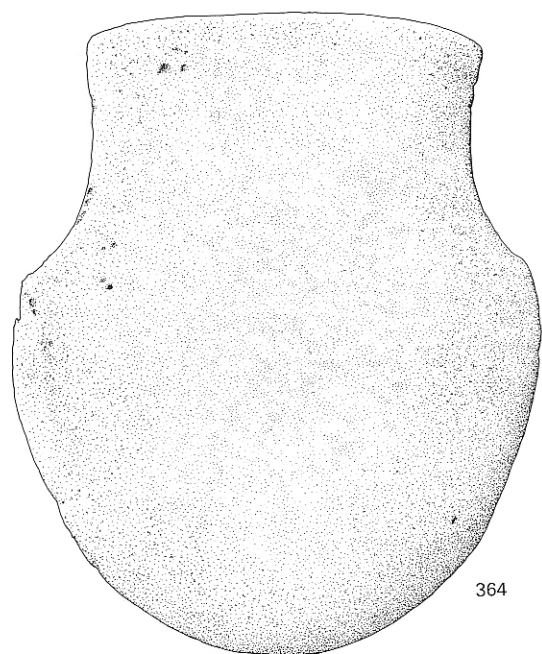


347 Sarthauli; 350 Sheorajpur; 351-353 Aguibani.  
Scale 1 : 3



354-360 Aguibani; 361-363 Andhari.

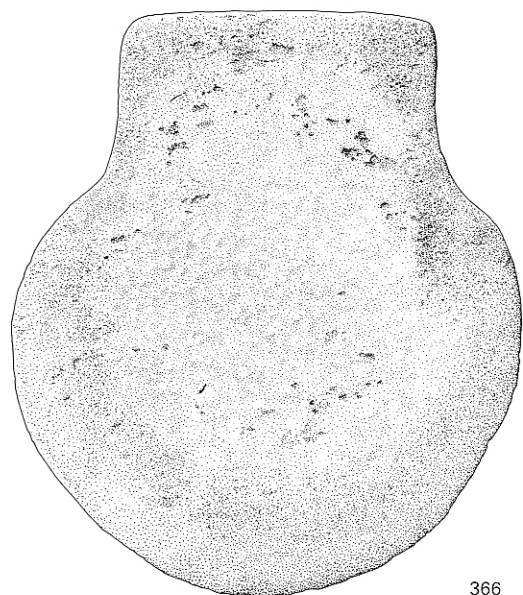
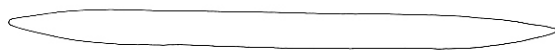
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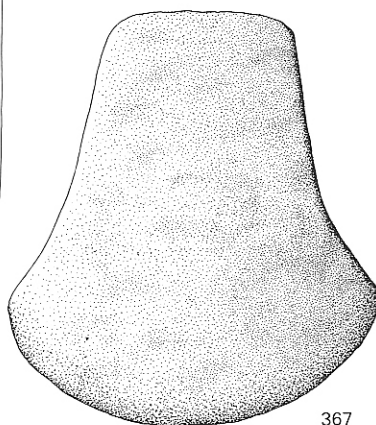
364



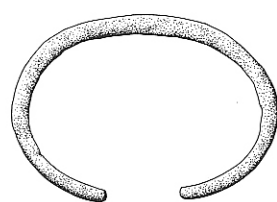
365



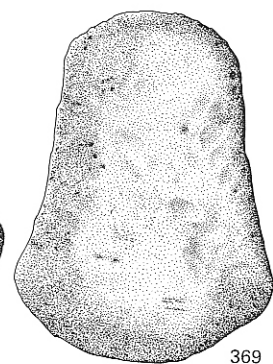
366



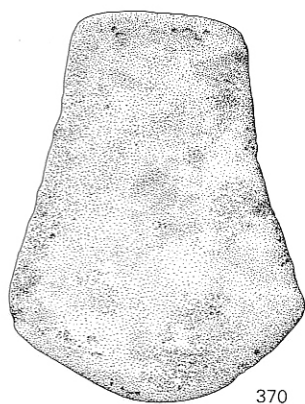
367



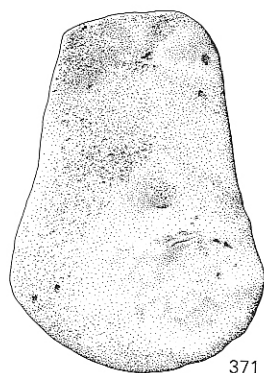
368



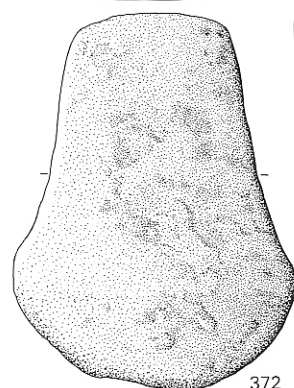
369



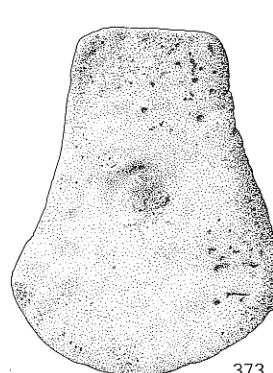
370



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373

364-366 Andhari; 367, 368 Near the Baragunda mine; 369-373 Bartola. - (367, 368 after Foote).

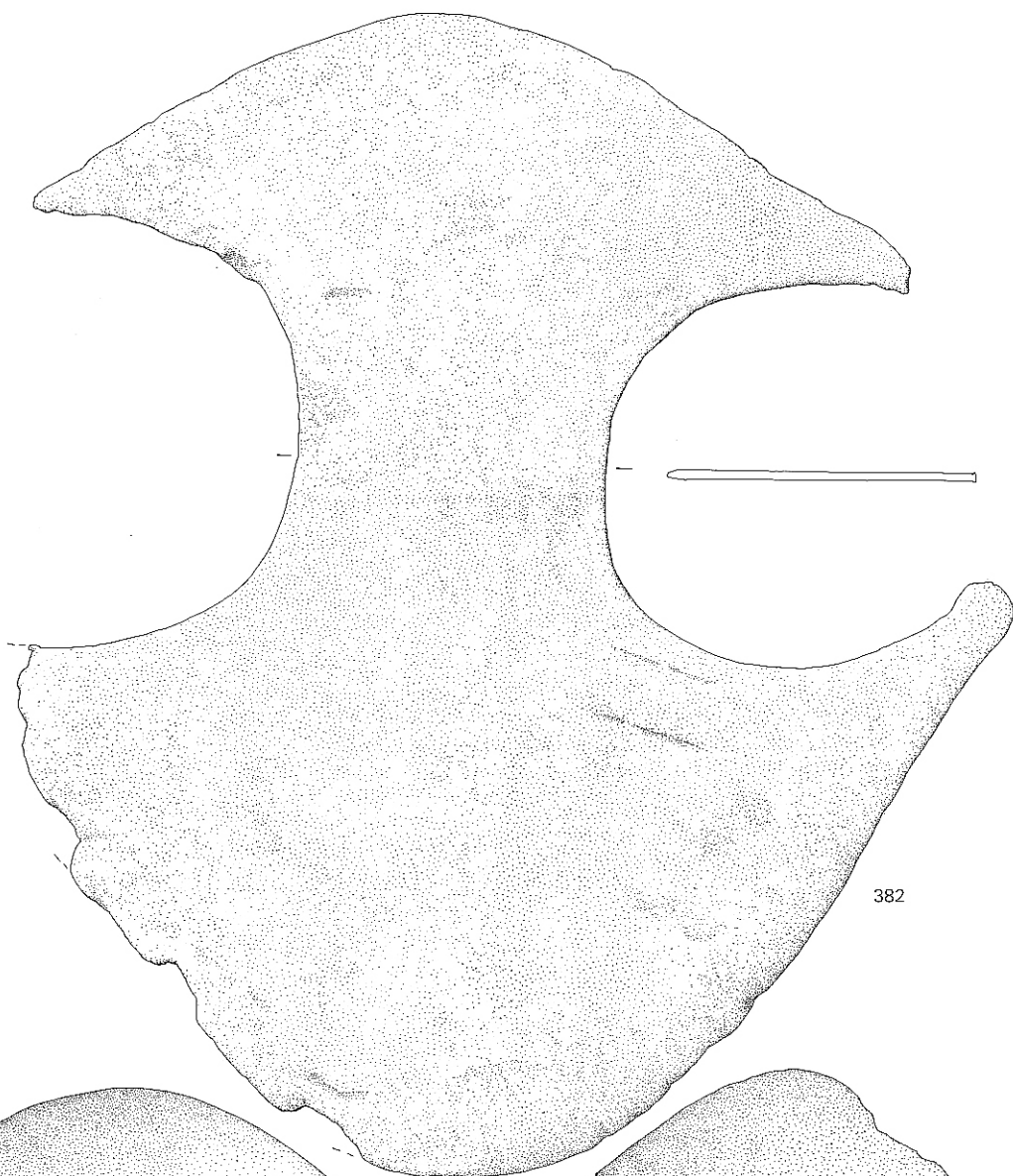
Scale 1 : 3



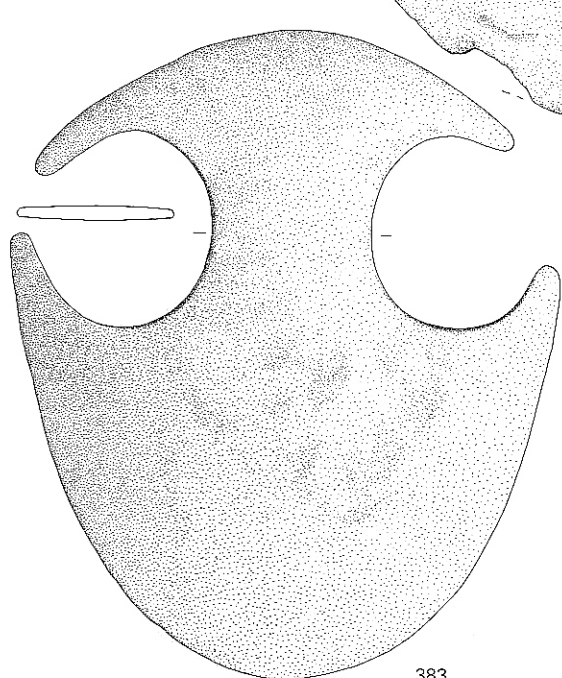
374-381 Bartola; 385, 386 Bhaktabundh.

Scale 1 : 3

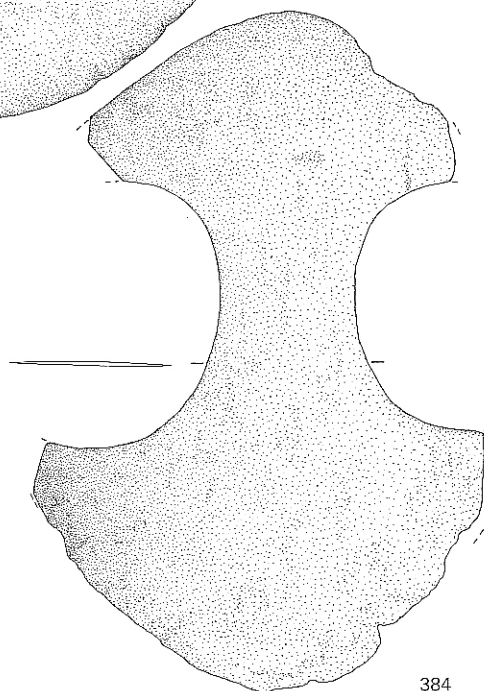




382



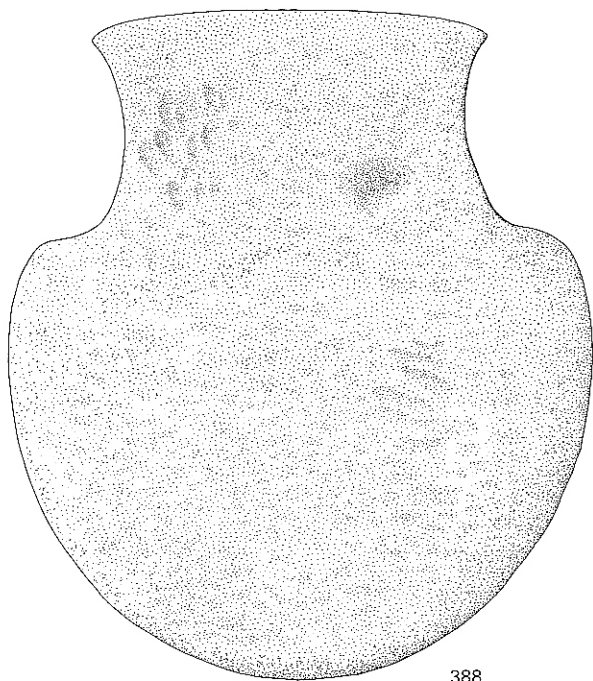
383



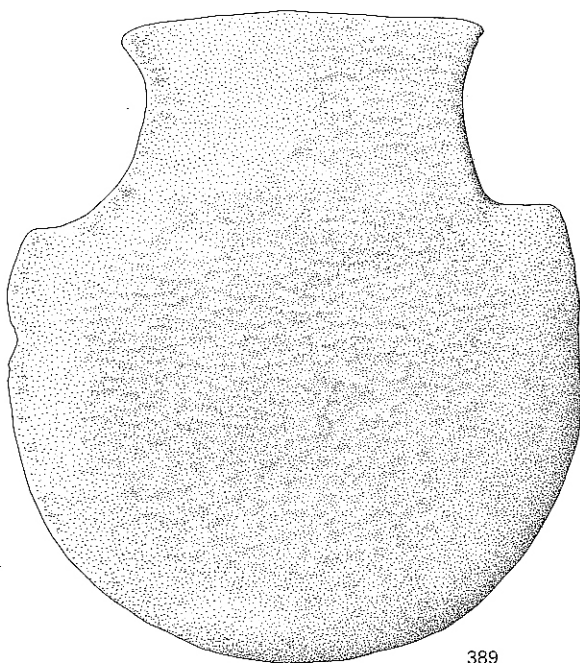
384

382-384 Bhagra Pir.

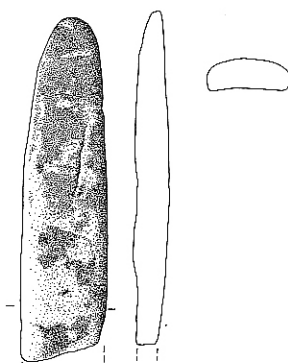
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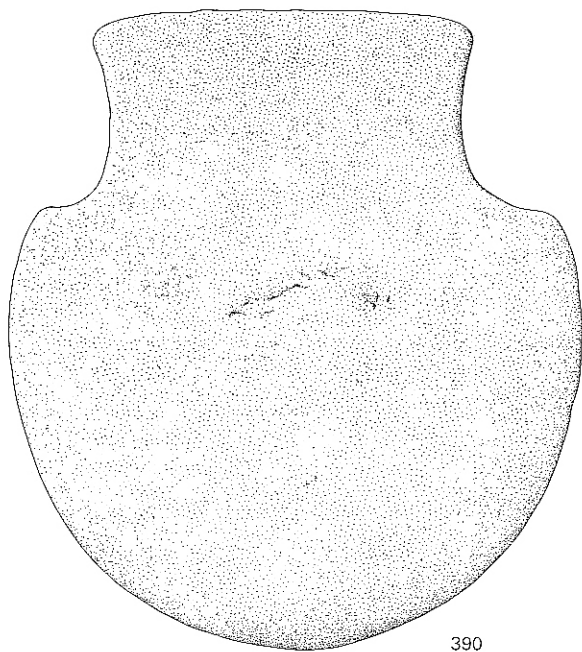
388



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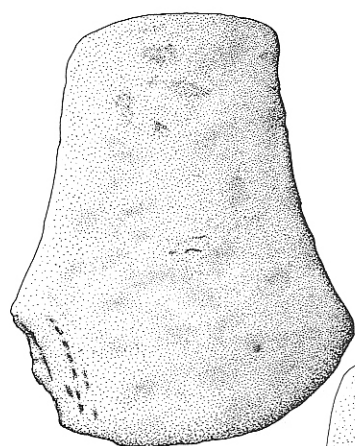


391

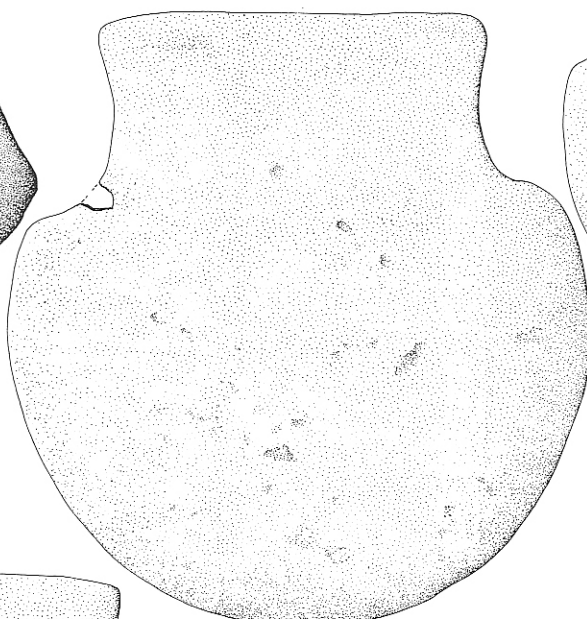
387-390 Bhaktabundh; 388 Borodanga; 391 Chandsar.

Scale 1 : 3

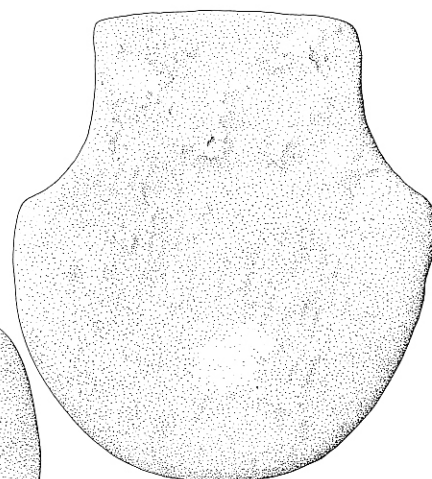




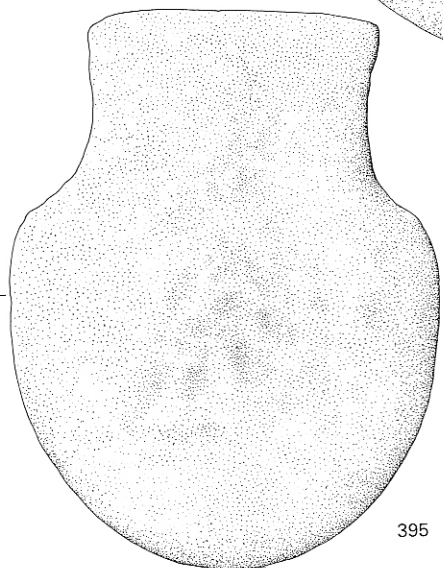
393



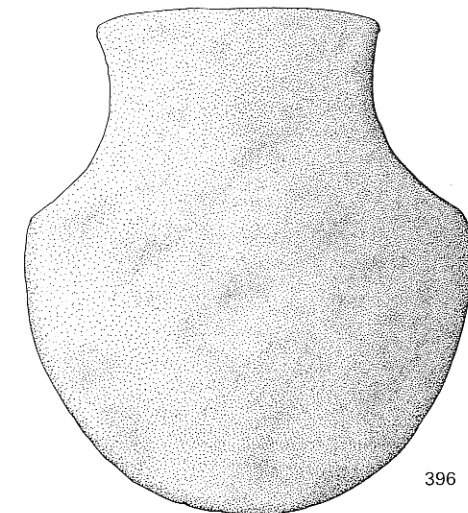
392



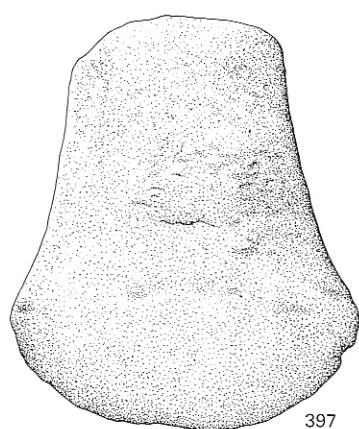
394



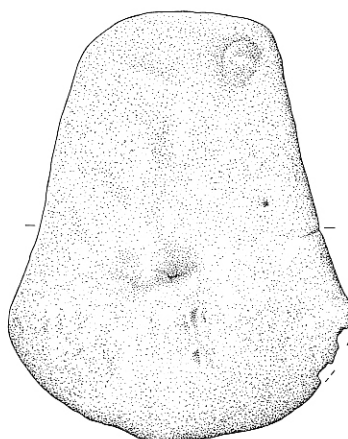
395



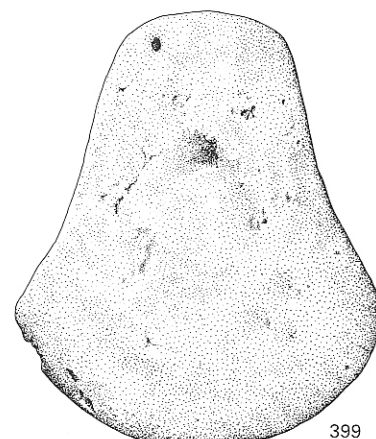
396



397



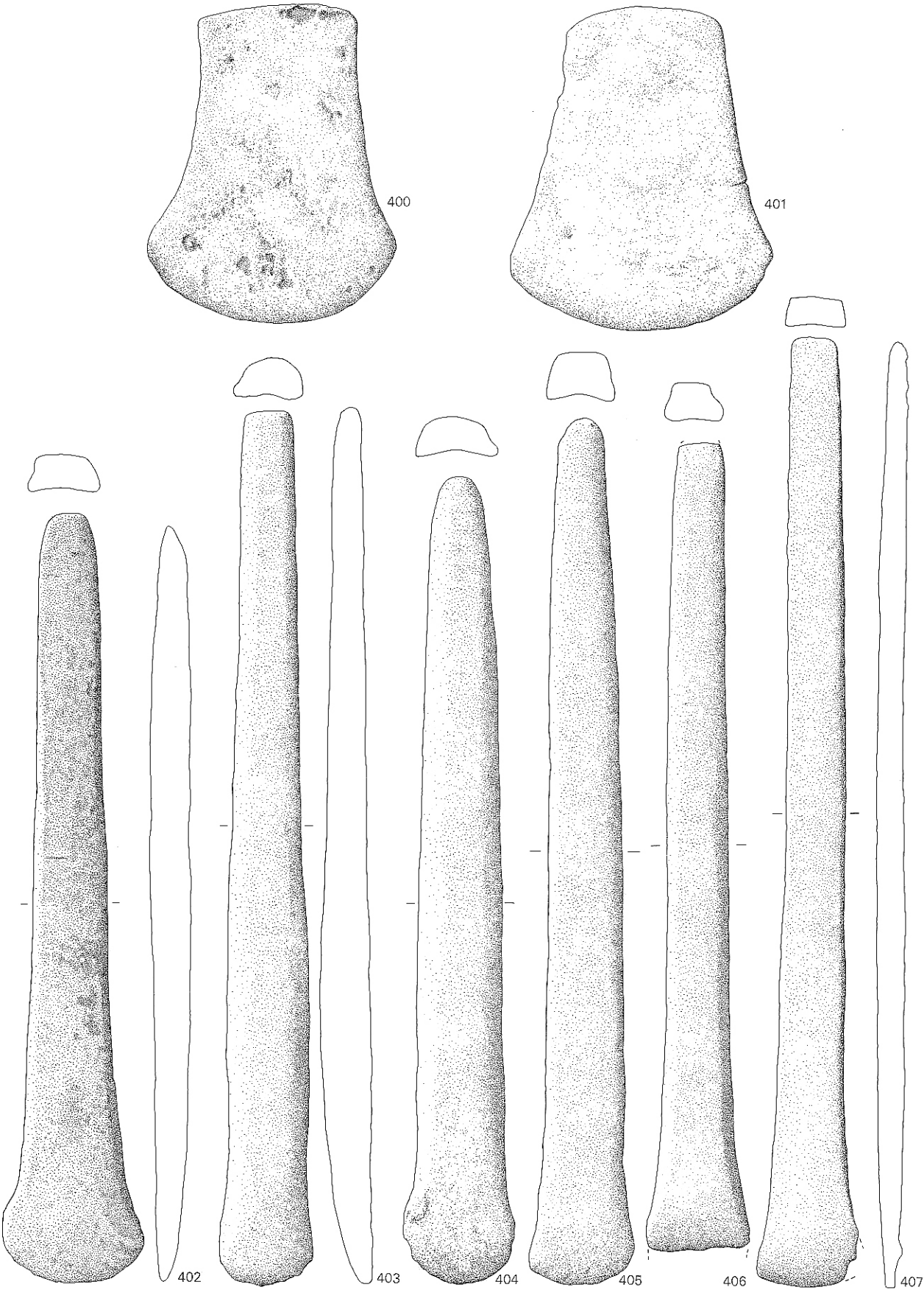
398



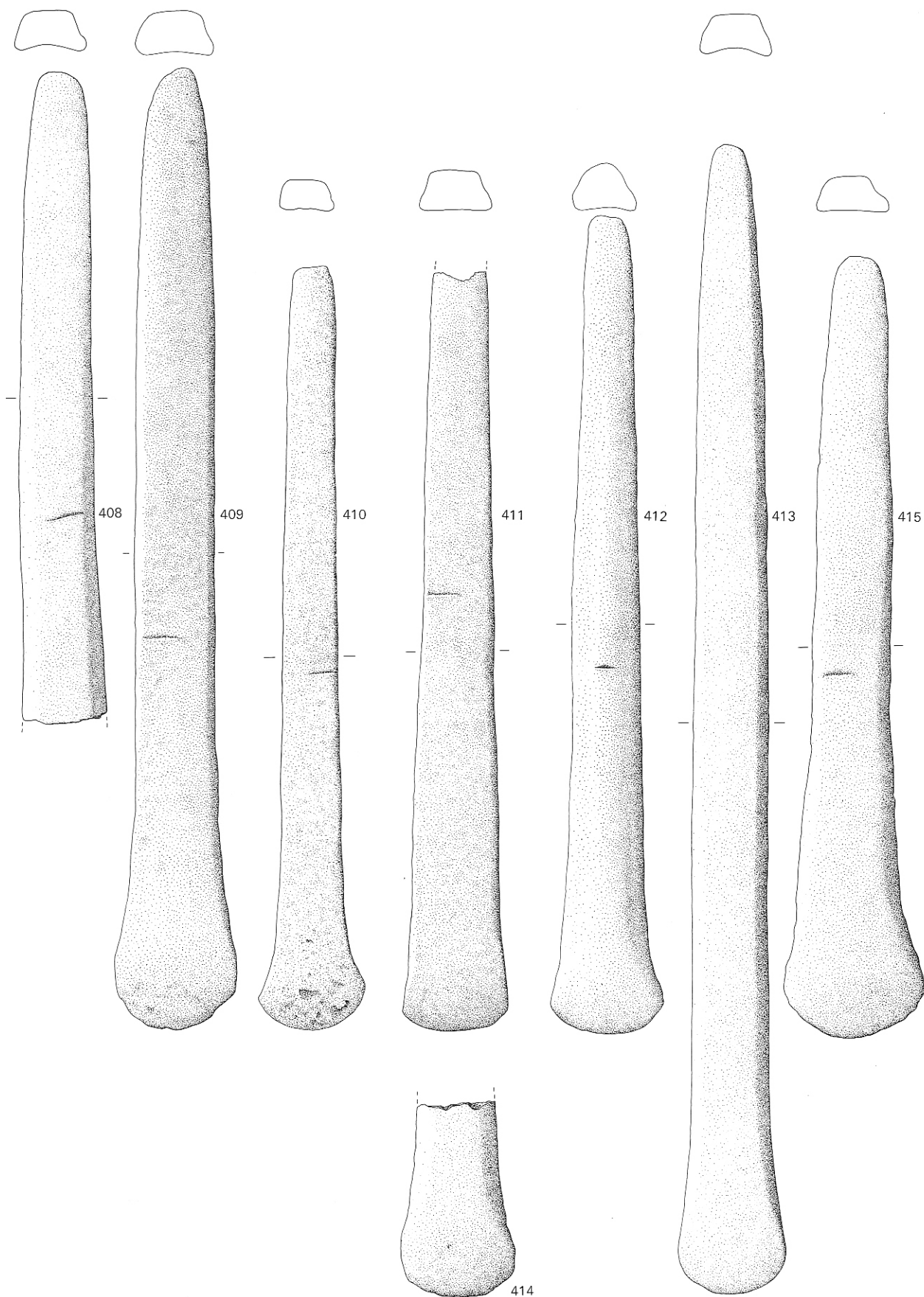
399

392 Chandsar; 393 Dargama; 394-396 Dunria; 397-399 Hami.

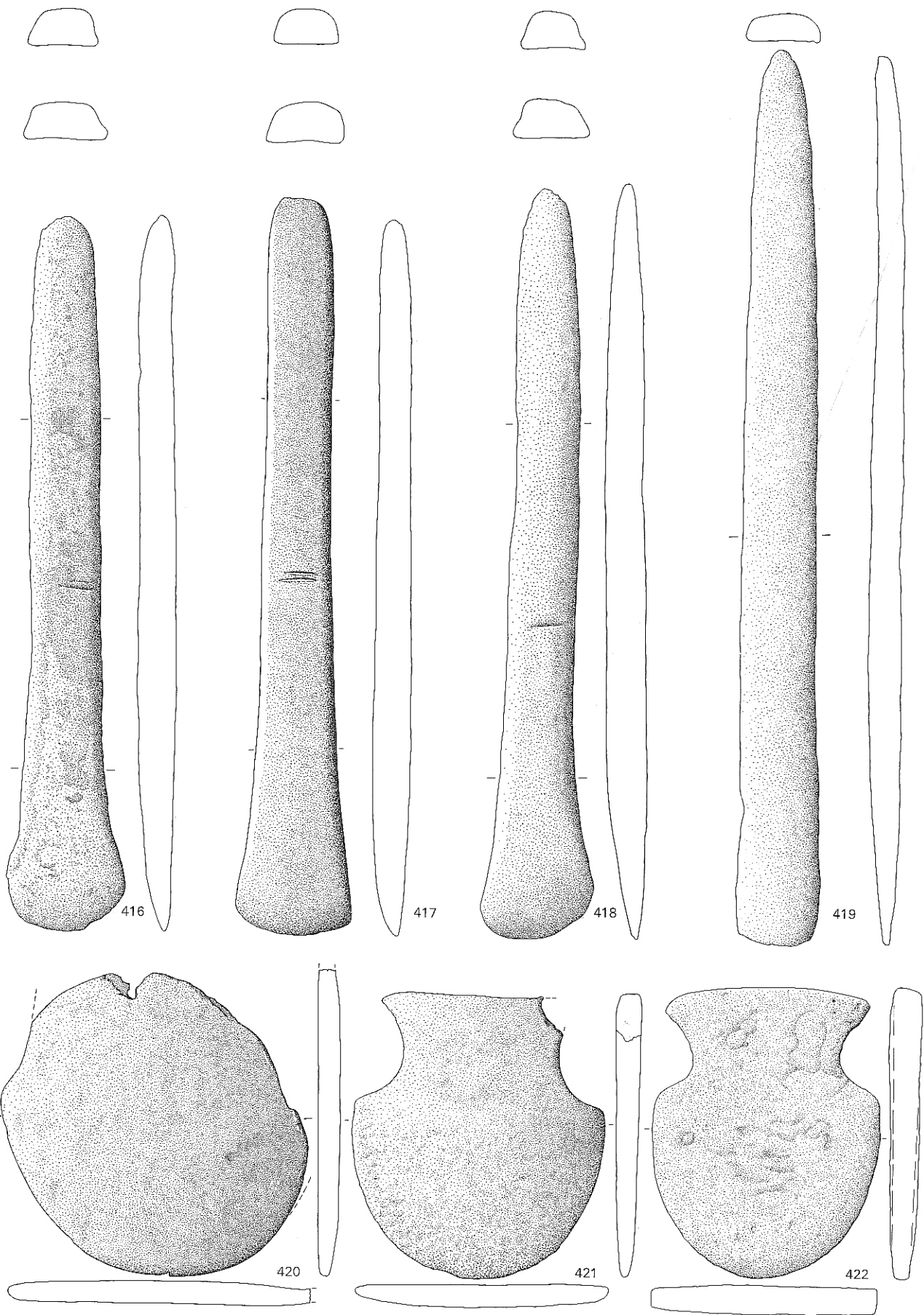
Scale 1 : 3



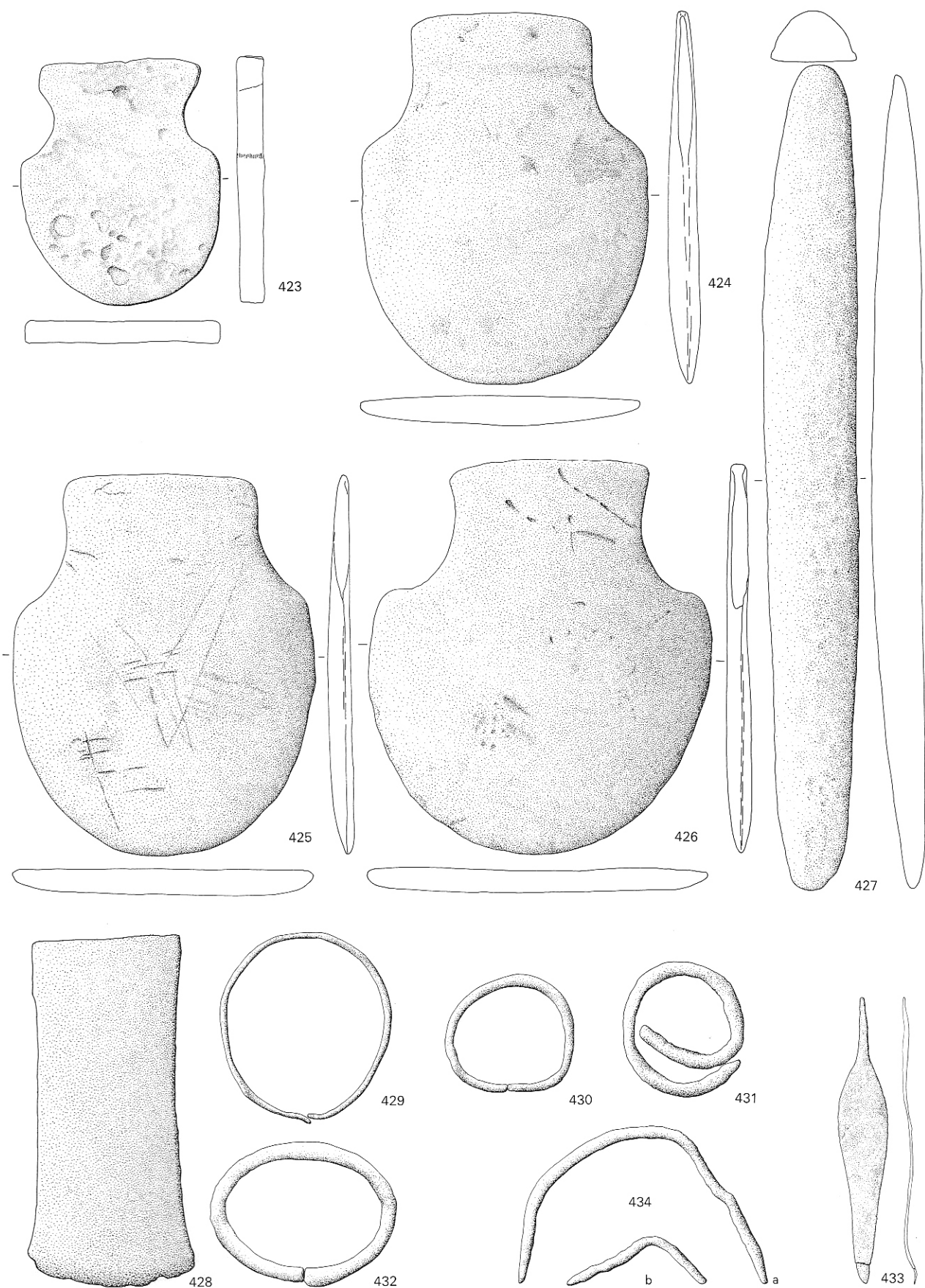
400-407 Hami.  
Scale 1 : 3



408-415 Hami.  
Scale 1 : 3

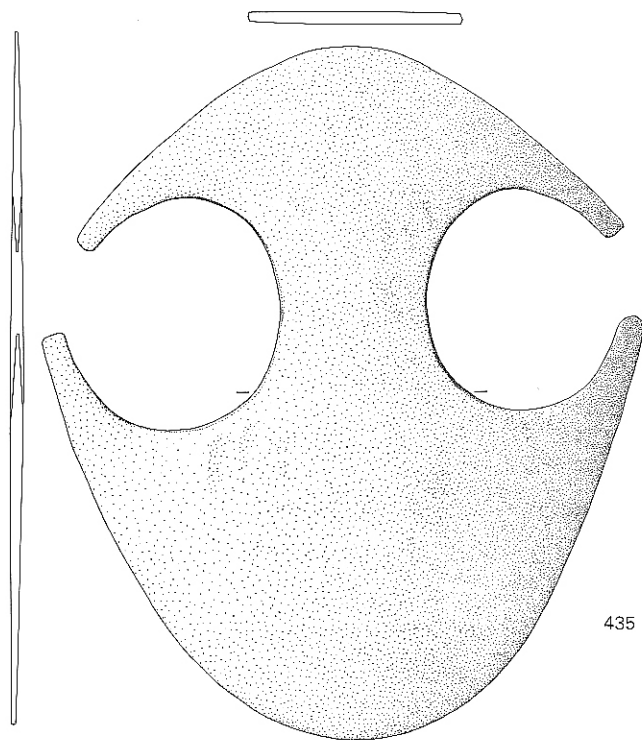


416-419 Hami; 420-422 Near Karharbari.  
Scale 1 : 3

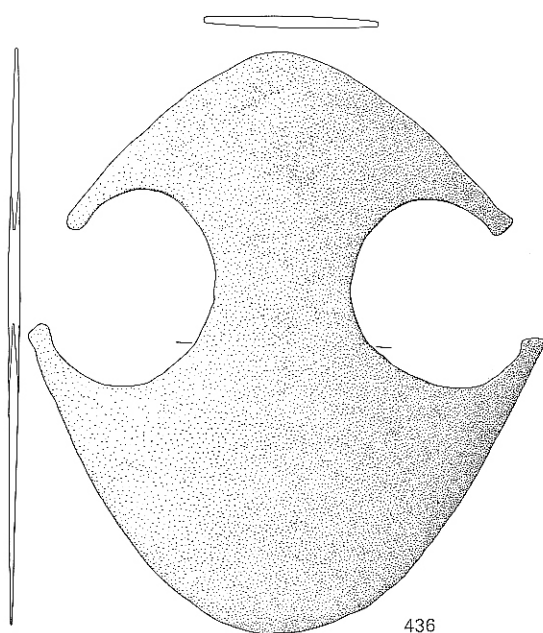


423 Near Karharbari; 424-427 Kulgara; 428 Mahisadal; 429-434 Pandu Rajar Dhibi. - (429-434 after Mukherjee).

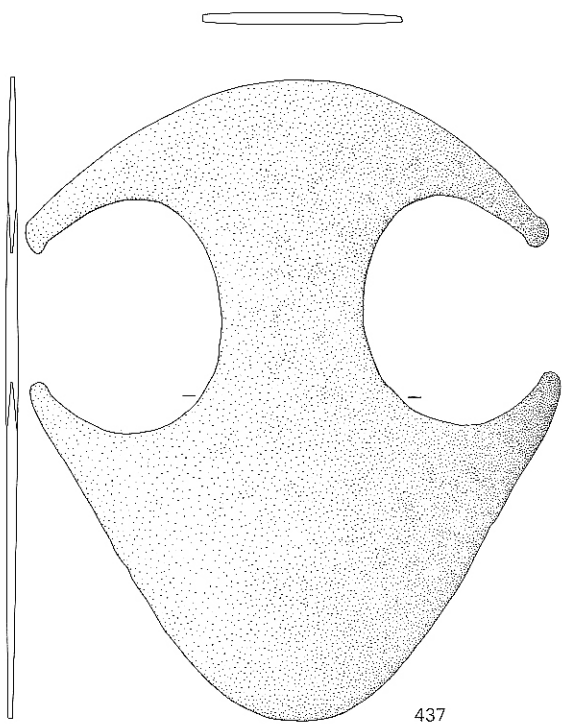
Scale 1 : 2



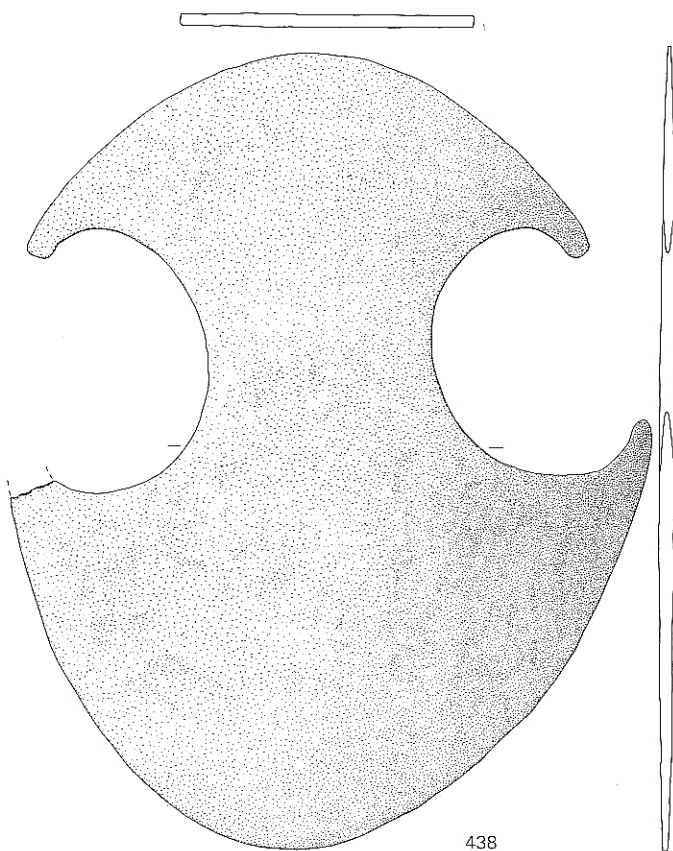
435



436



437

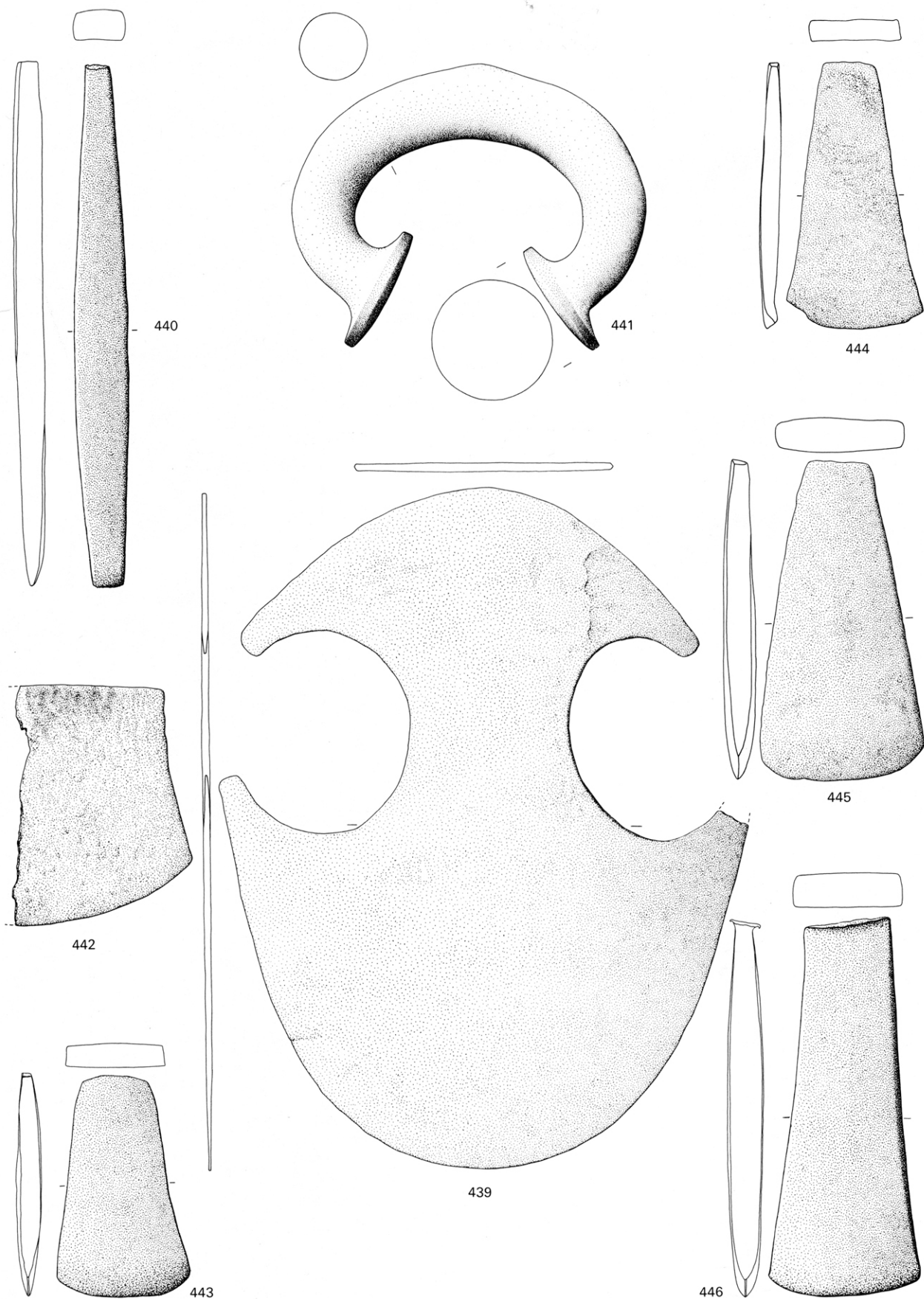


438

435-438 Paribati.

Scale 1 : 3

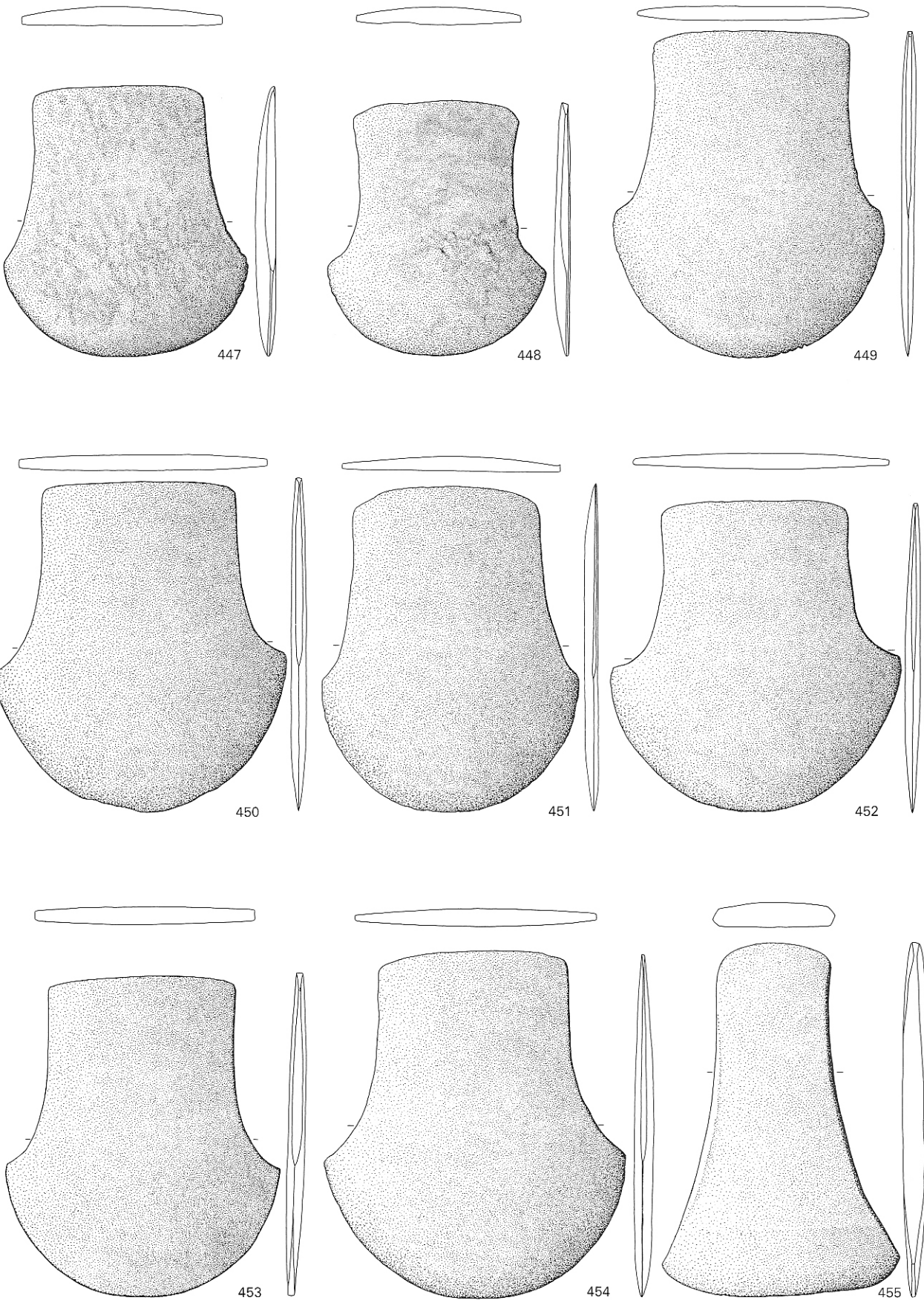




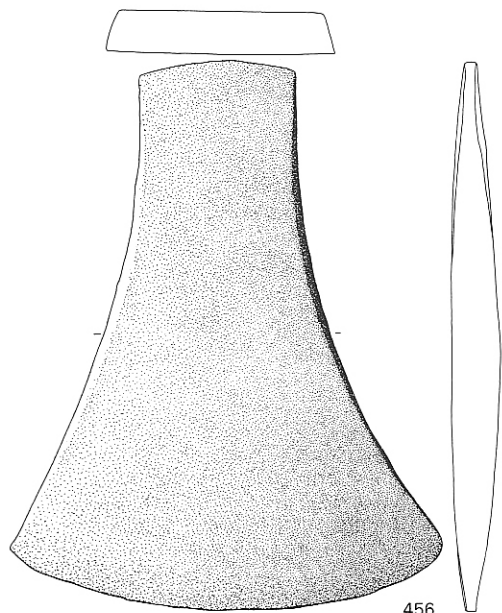
439-441 Parihati; 442 Eran (after Bajpai); 443-446 Gungeria.

Scale 1 : 3

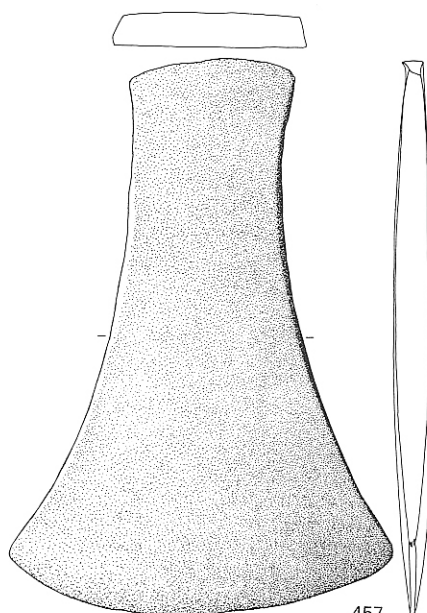




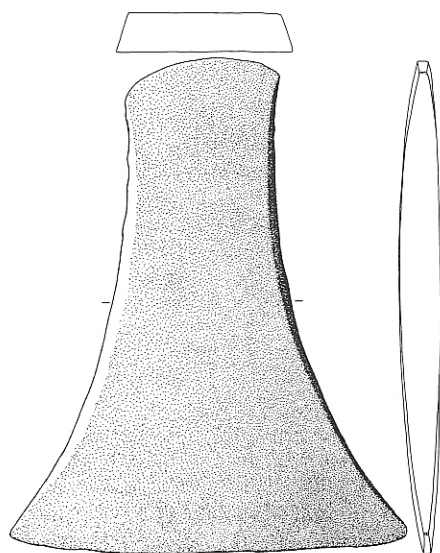
447-455 Gungeria.  
Scale 1 : 3



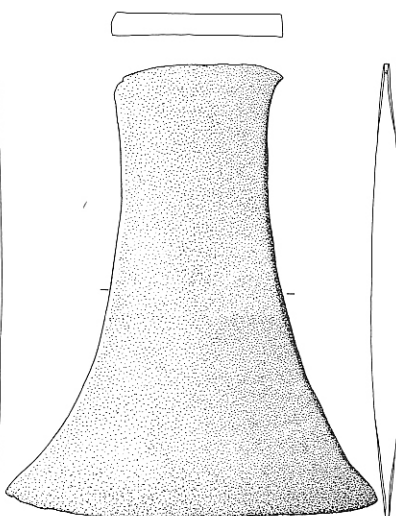
456



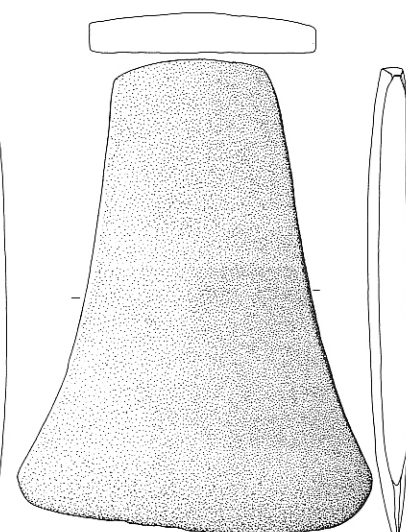
457



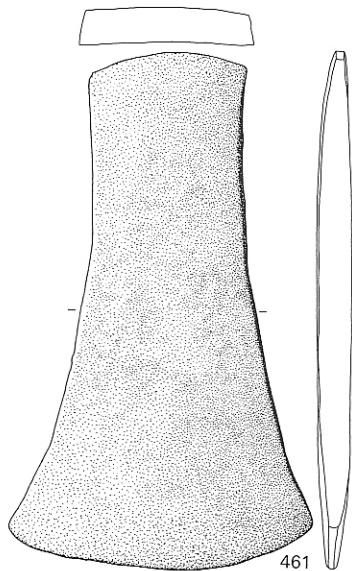
458



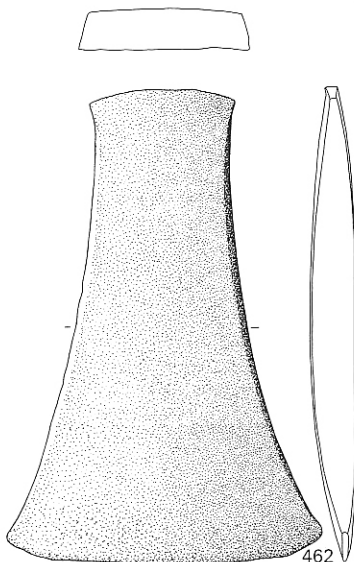
459



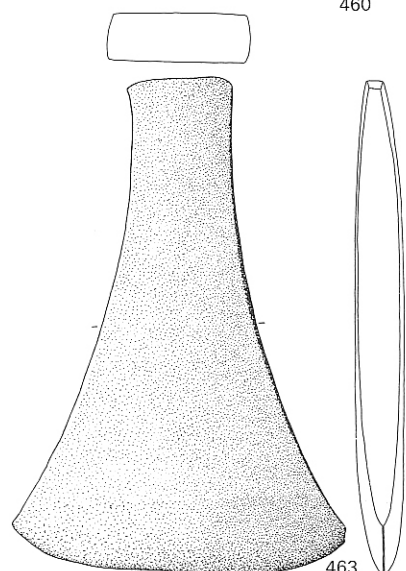
460



461



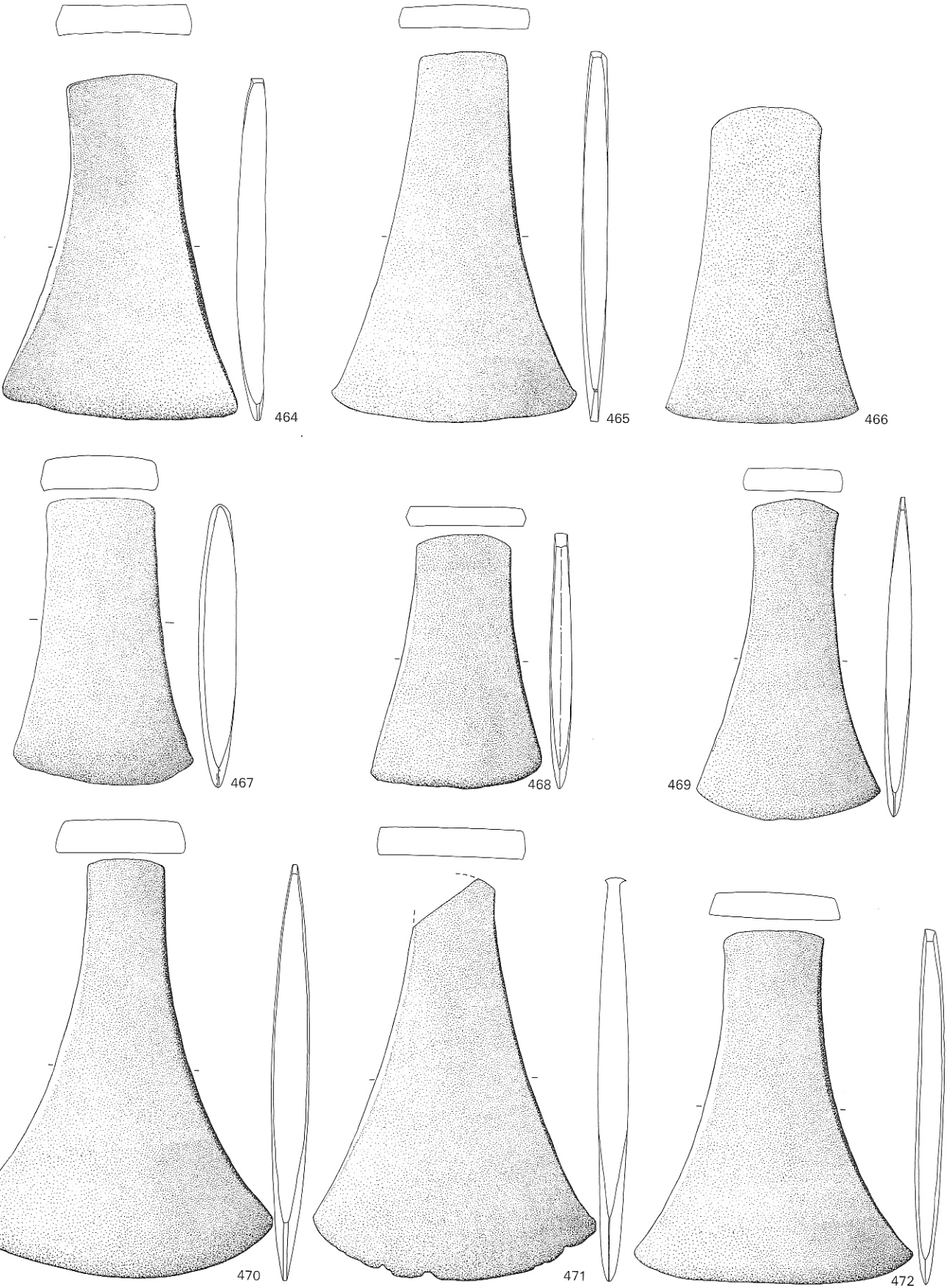
462



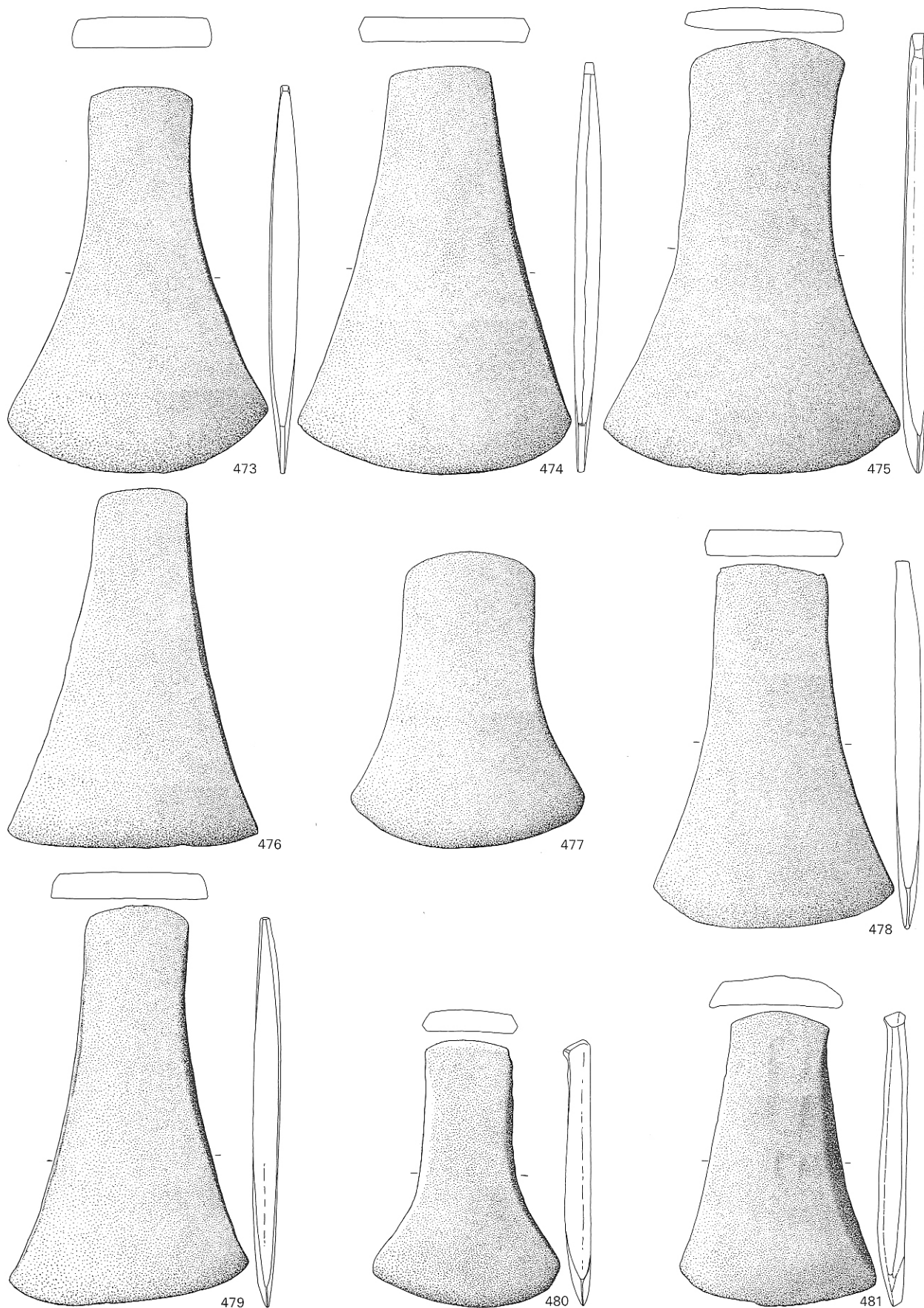
463

456-463 Gungeria.

Scale 1 : 3

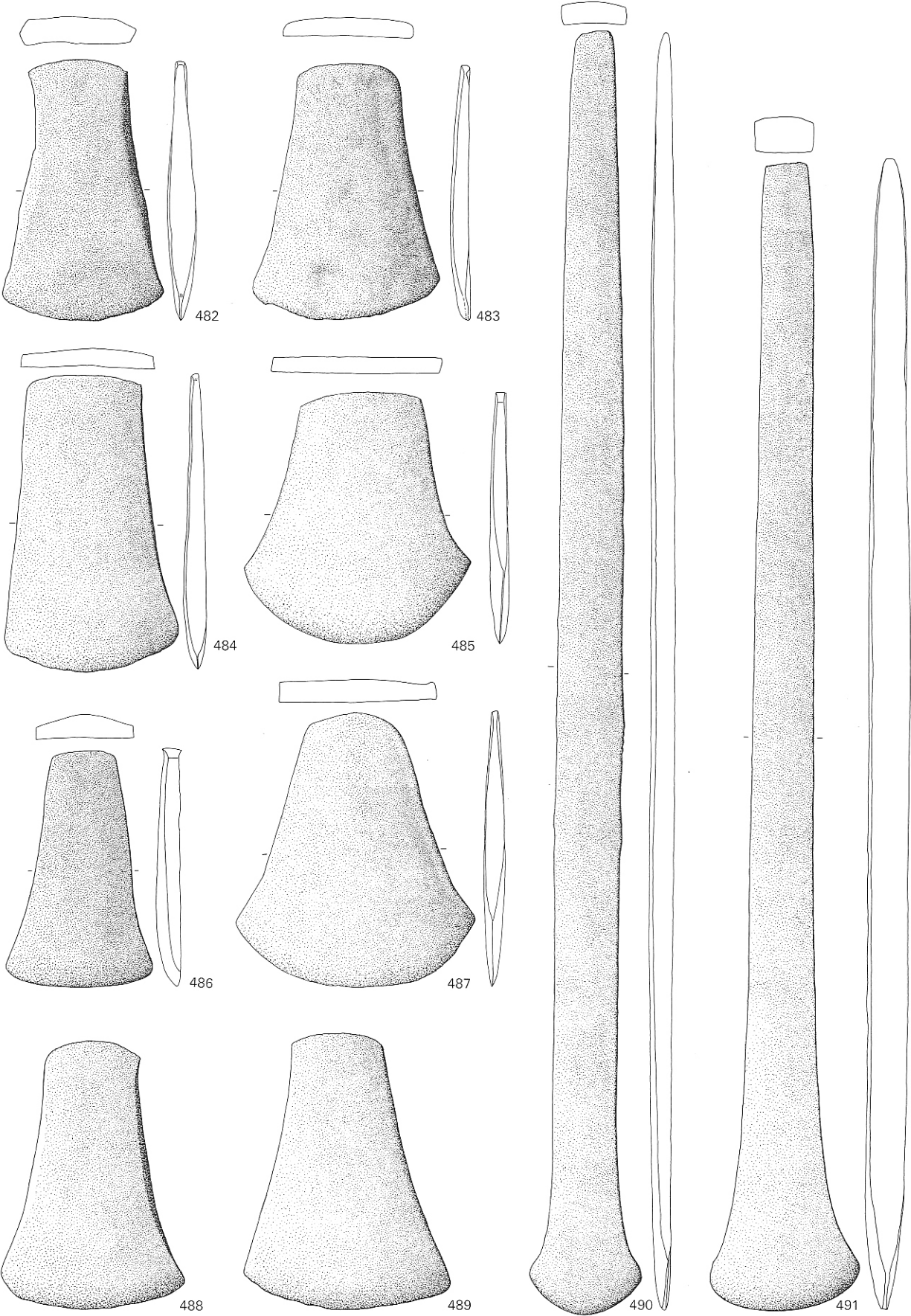


464–472 Gungeria. – (466 after Montelius).  
Sclae 1 : 3



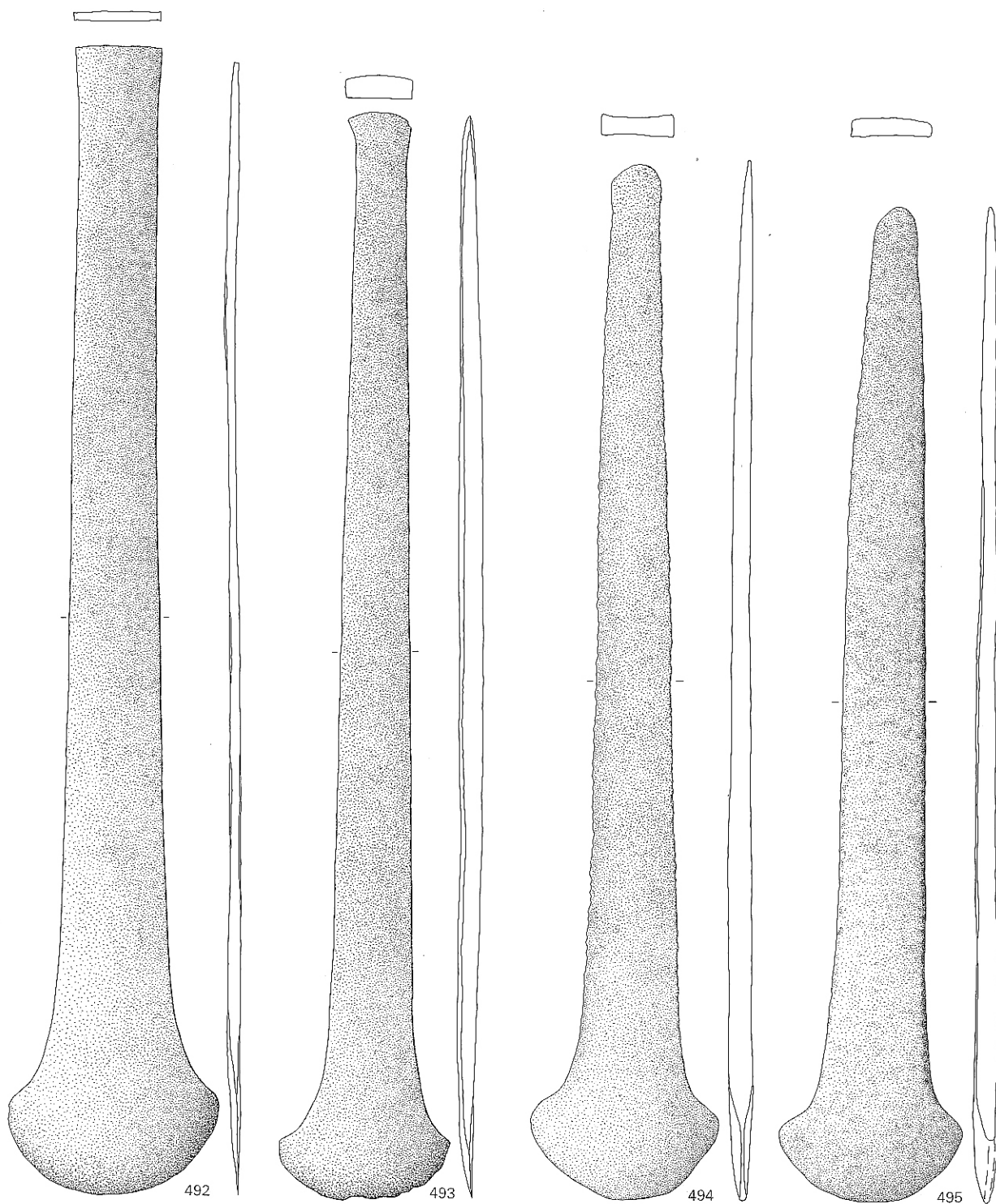
473-481 Gungeria. - (476.477 after Smith).

Scale 1 : 3

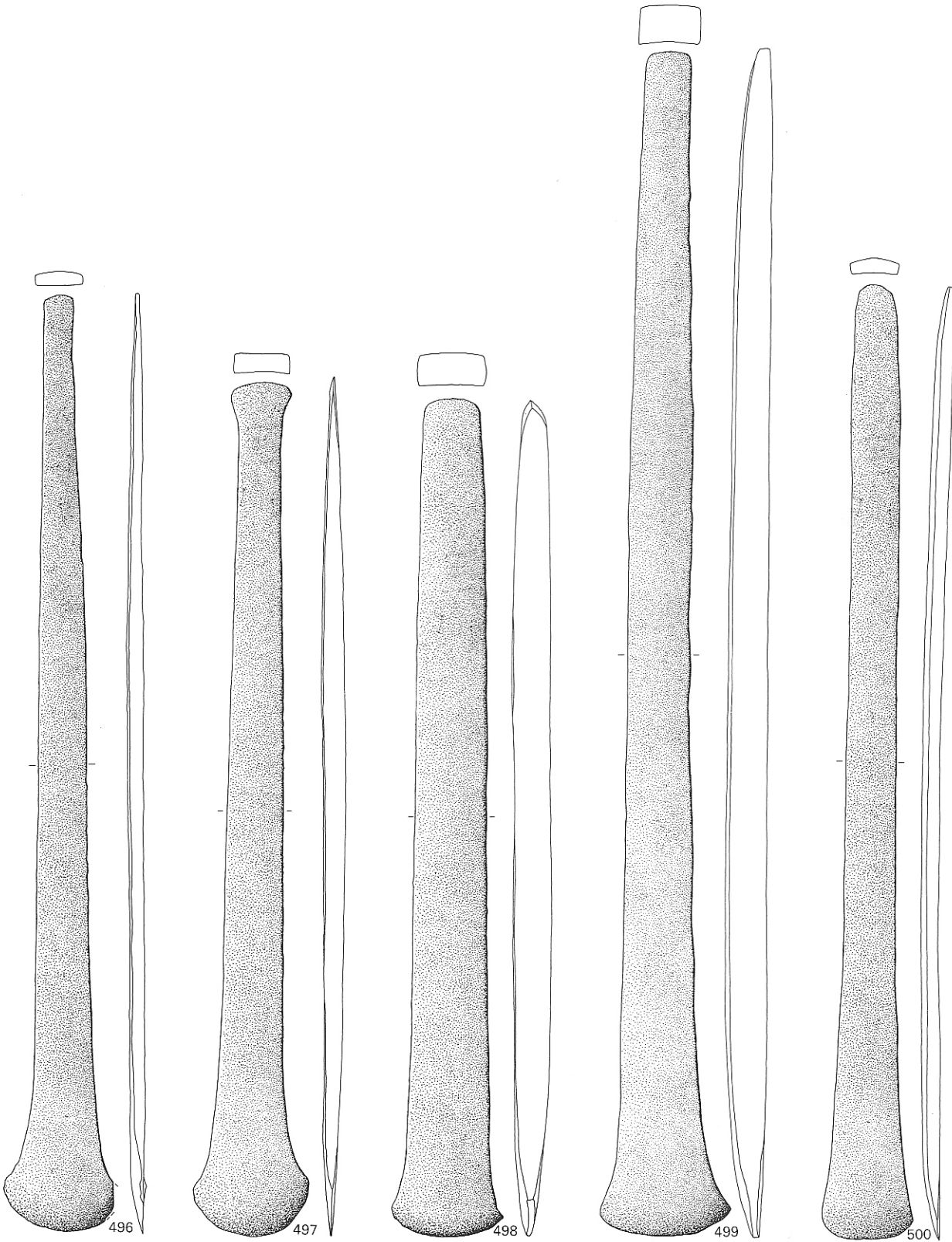


482-491 Gungeria. - (433.489 after Smith).  
Scale 1 : 3



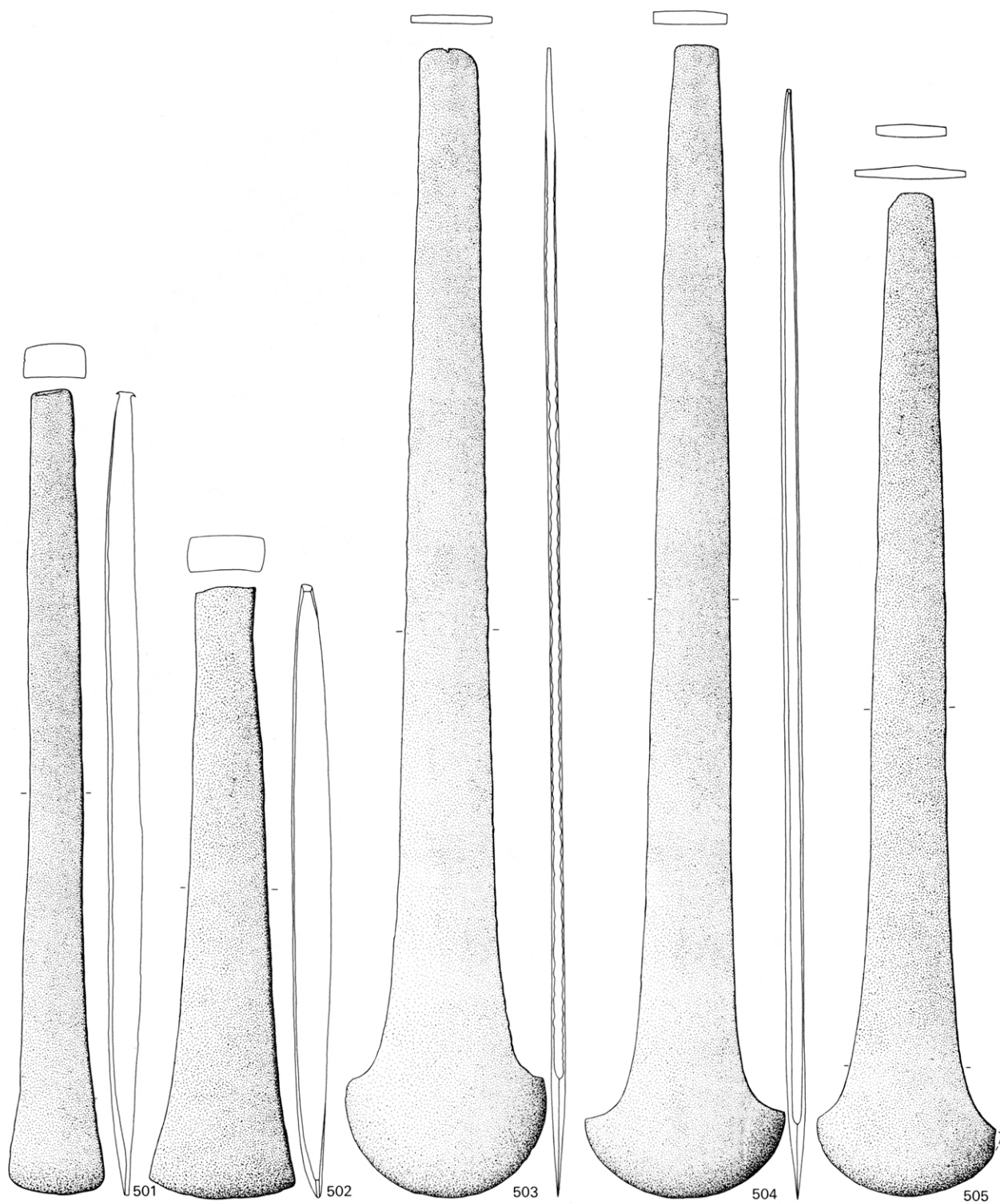


492-495 Gungeria:  
Scale 1 : 3

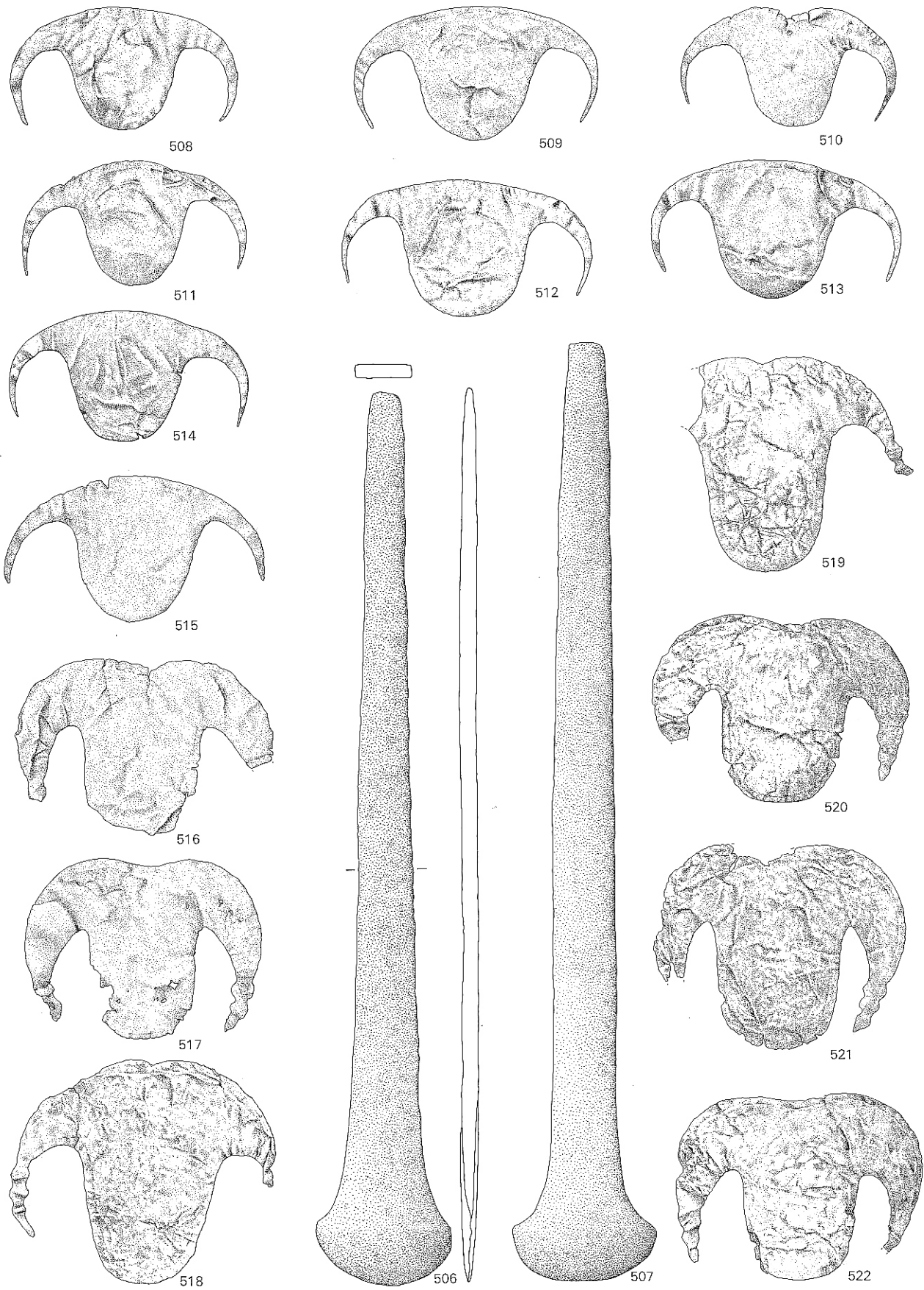


496-500 Gungeria.  
Scale 1 : 3

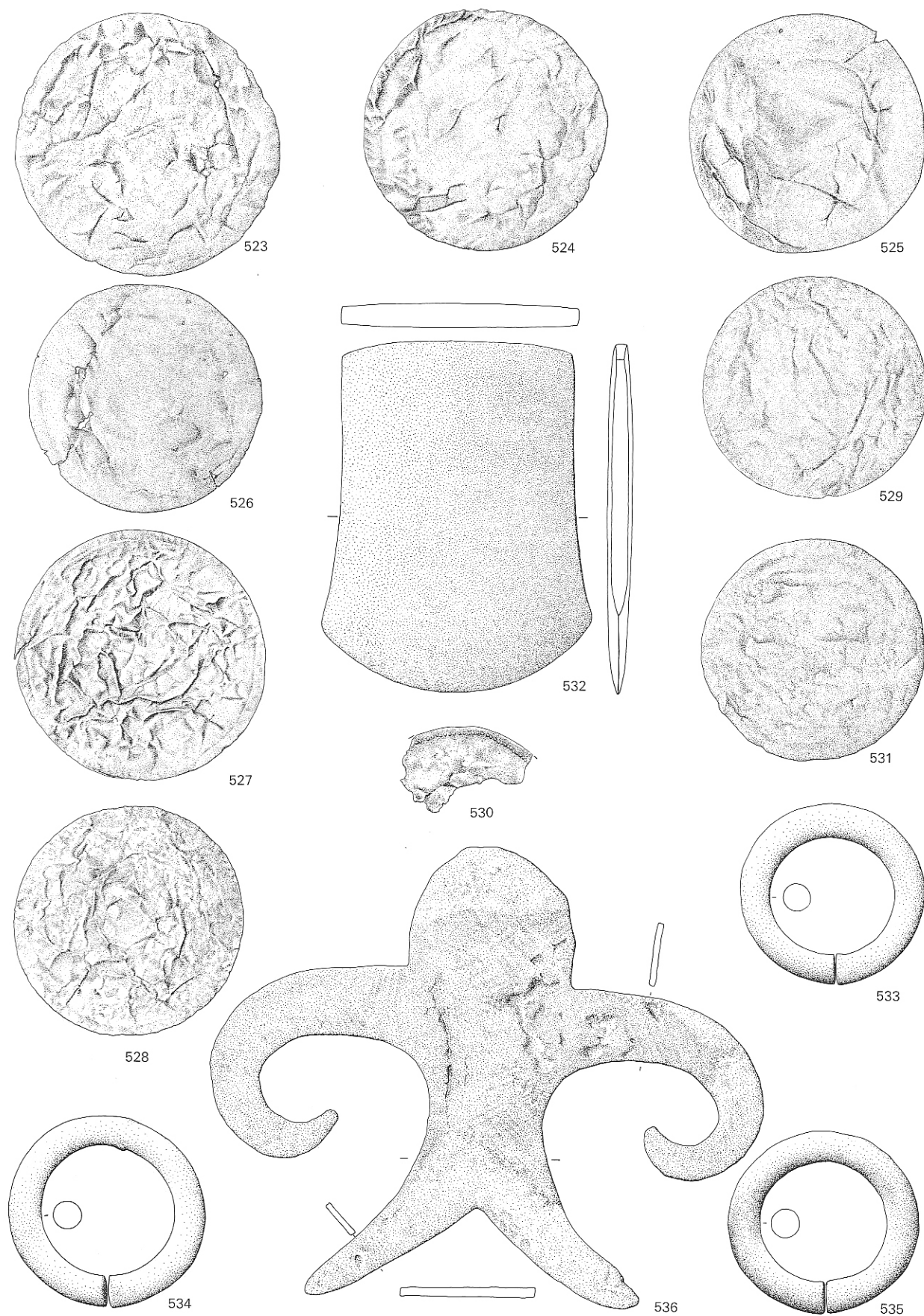




501-505 Gungeria.  
Scale 1 : 3

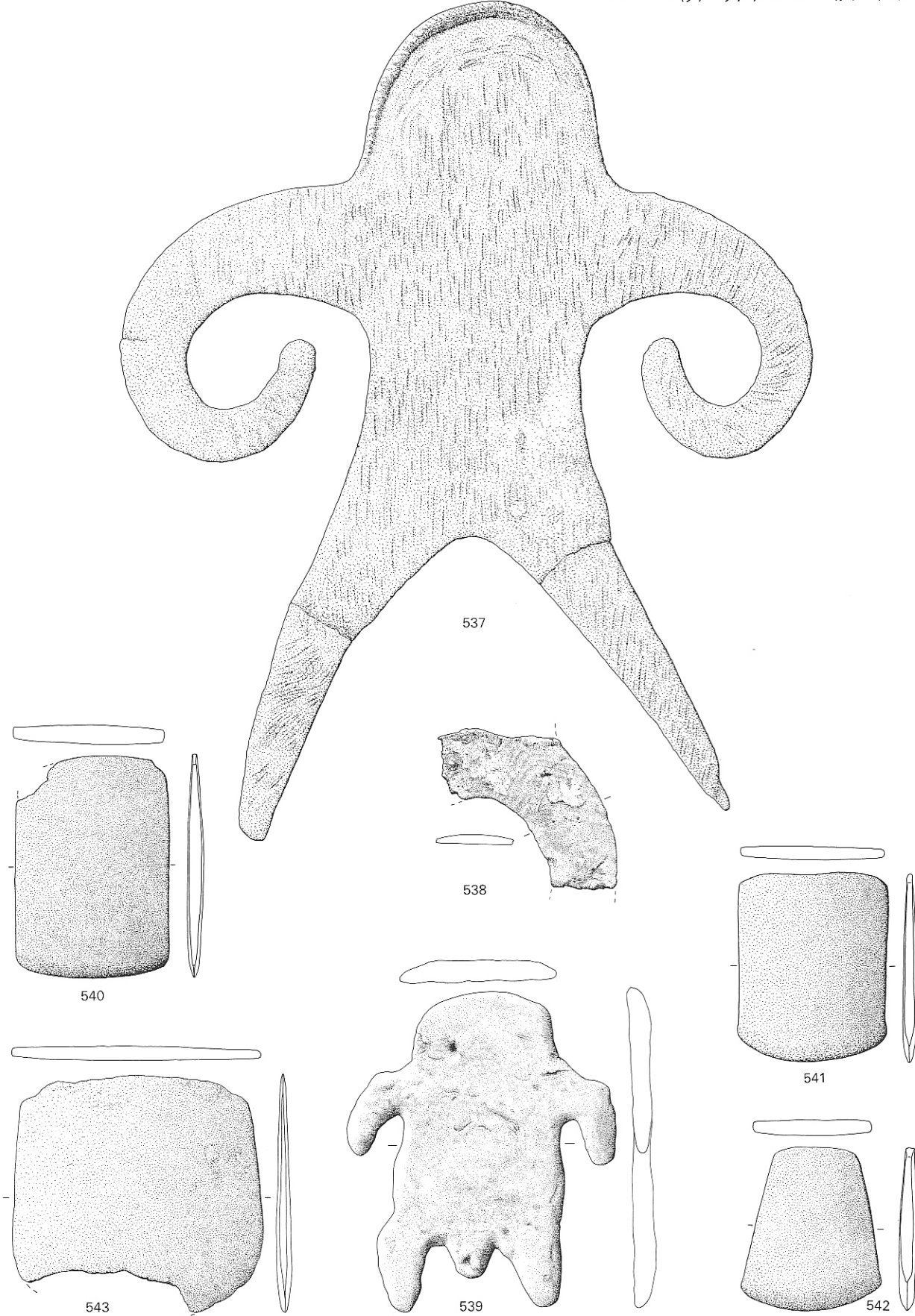


506-522 Gungeria.  
Scale 1 : 3



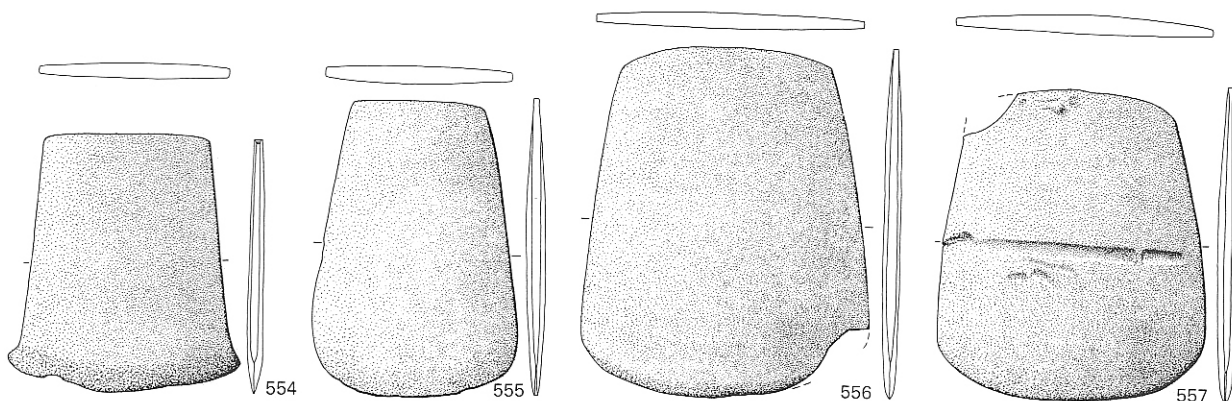
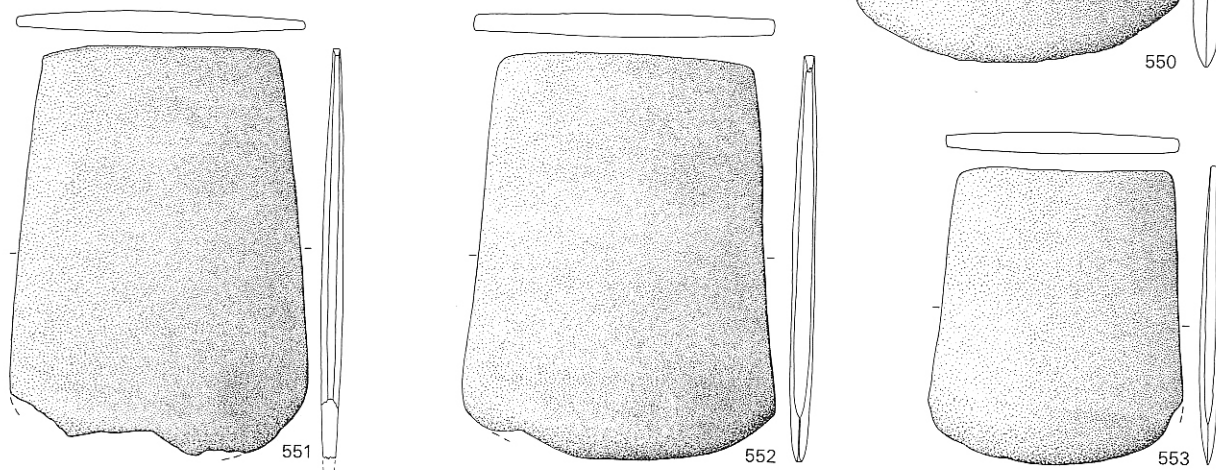
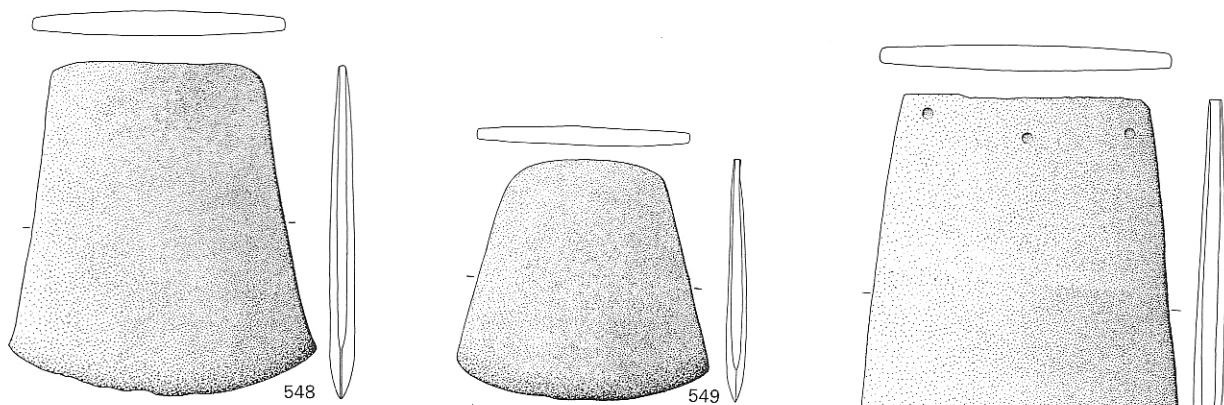
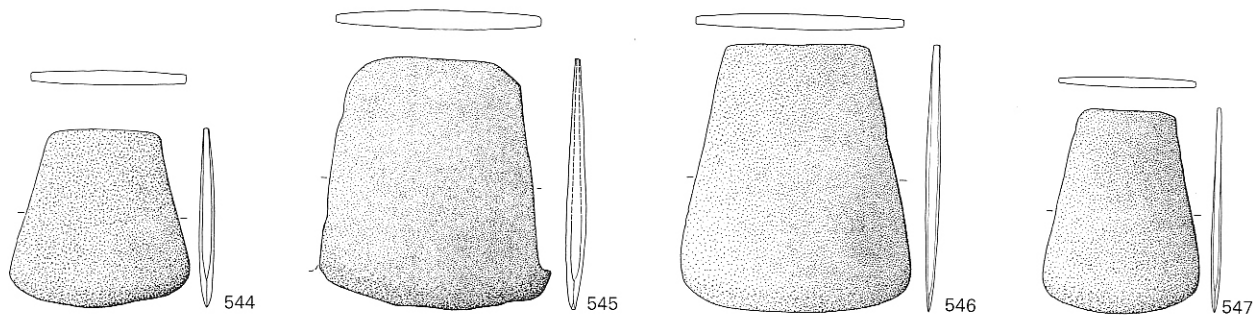
523–531 Gungeria; 532–535 Pondi; 536 Prov. unknown. – (531 after Smith).

Scale 1 : 3



537 Chandausi; 538 Ambala; 539 Dist. Manbhum; 540 Hansi; 541 Rewari; 542.543 Bithur.

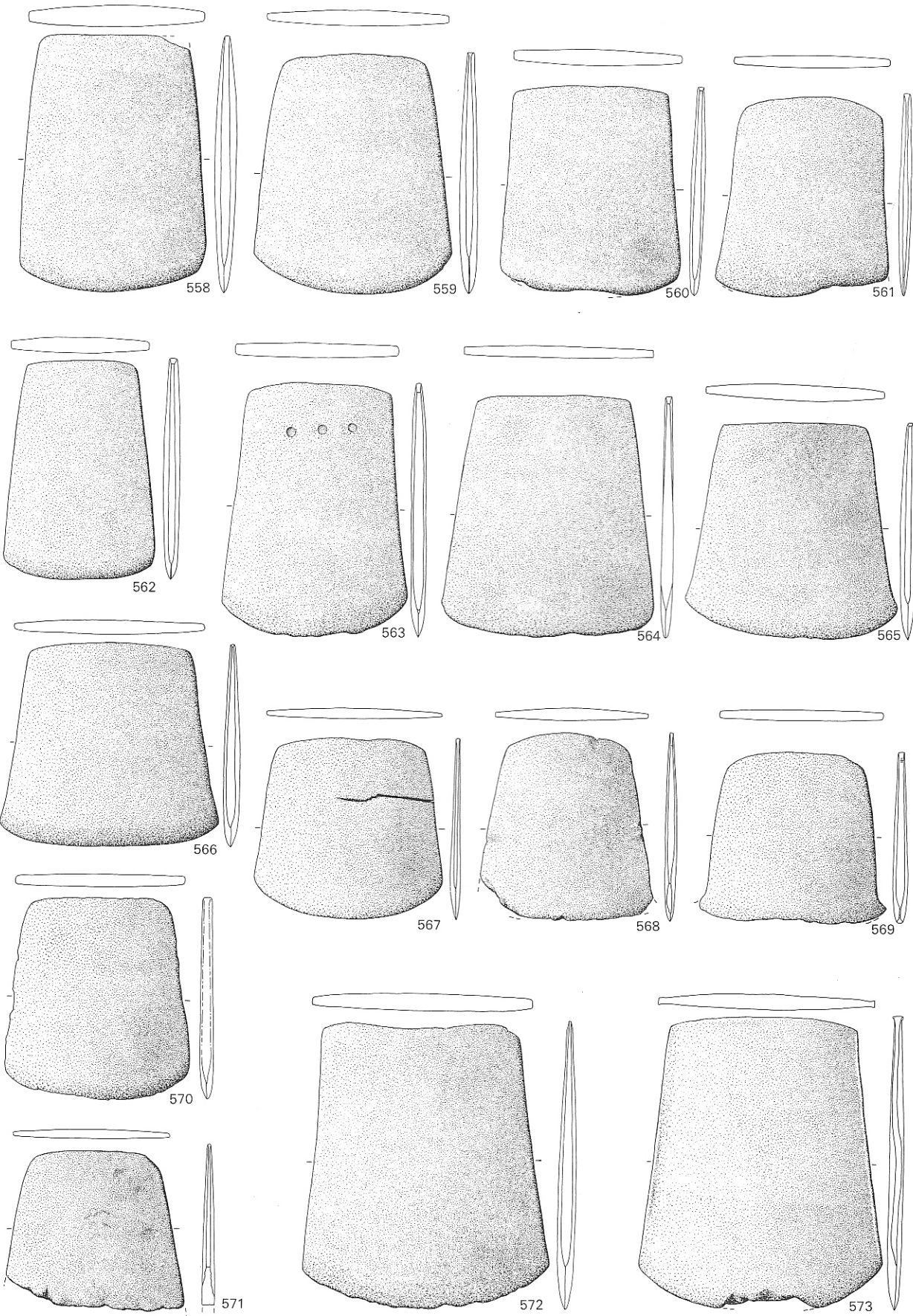
Scale 1 : 3



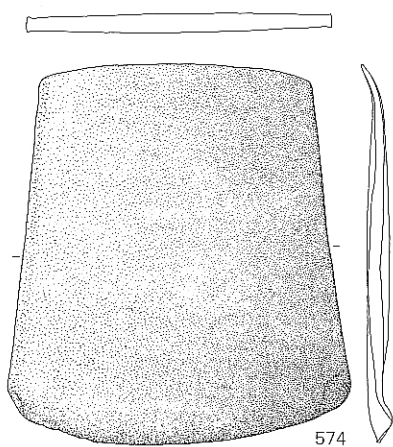
544-547 Hansi; 548-557 Rewari.

Scale 1 : 3

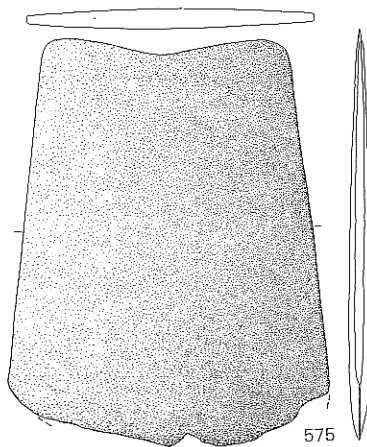




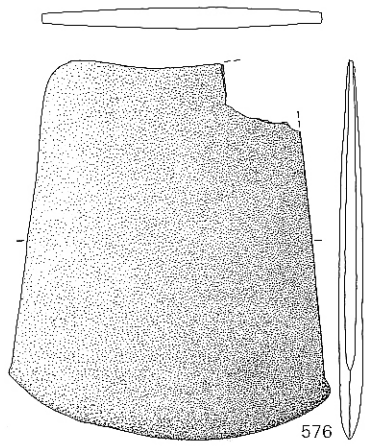
558-573 Rewari.  
Scale 1 : 3



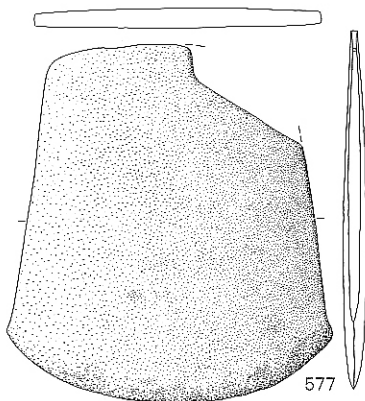
574



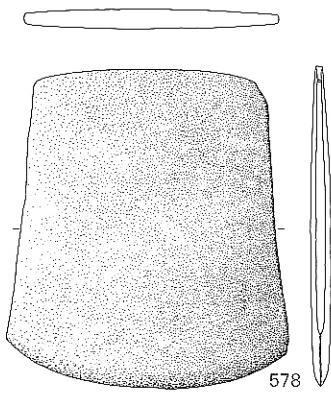
575



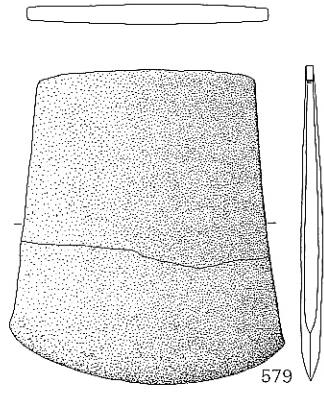
576



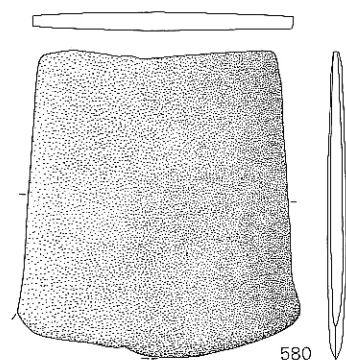
577



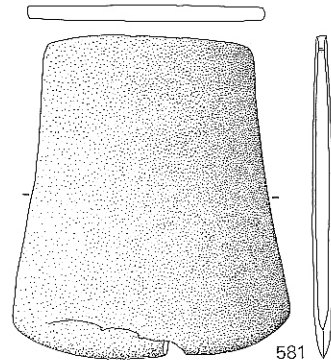
578



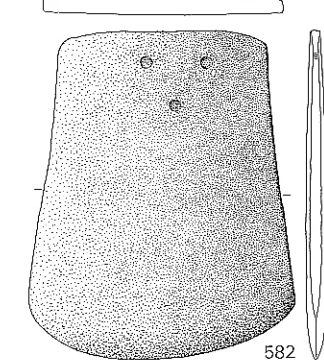
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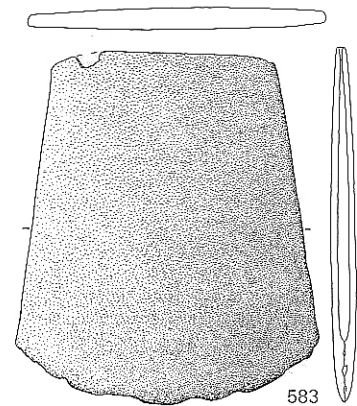
580



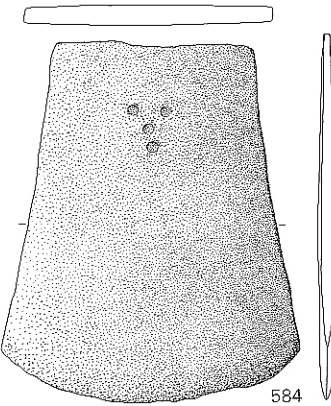
581



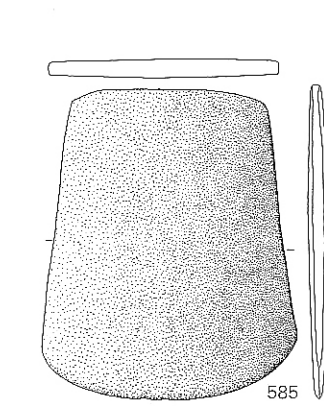
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583

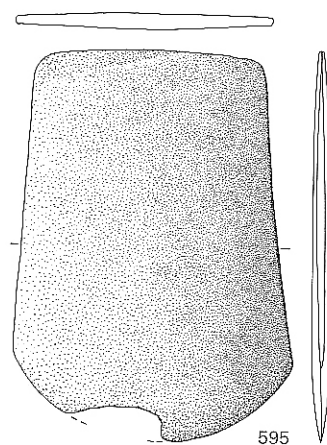
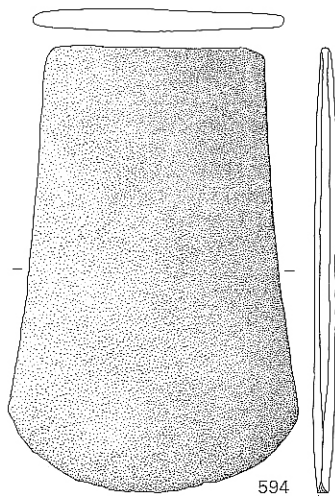
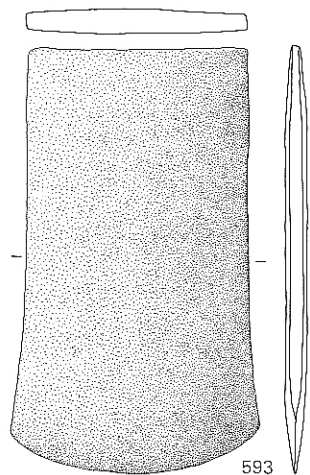
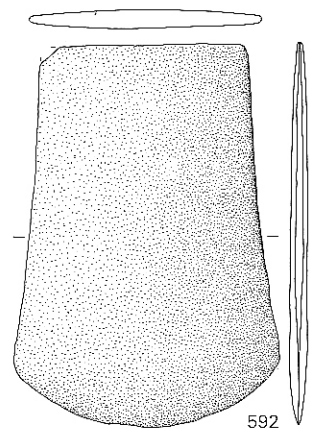
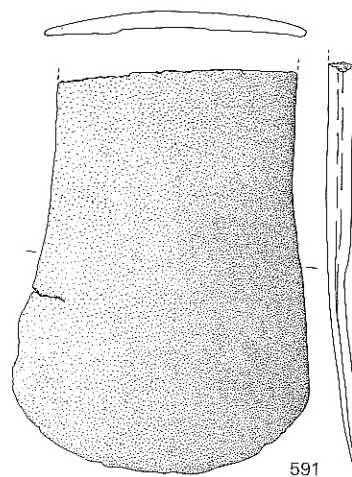
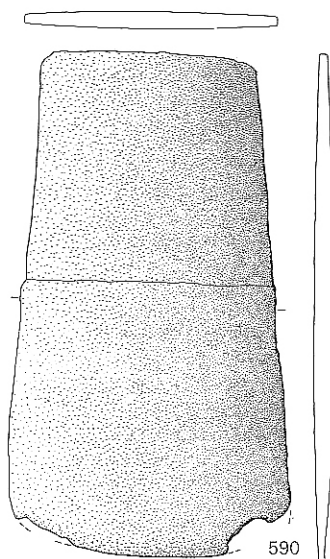
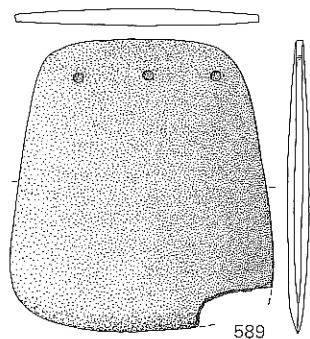
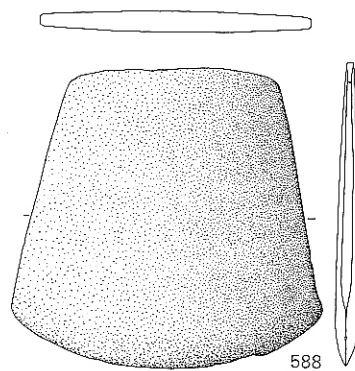
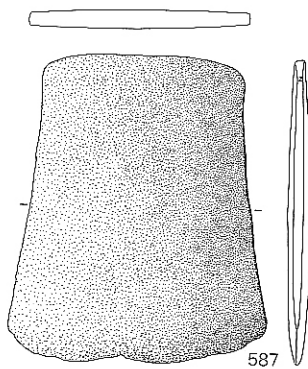
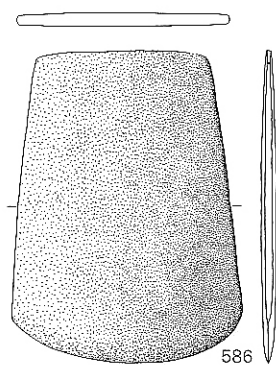


584



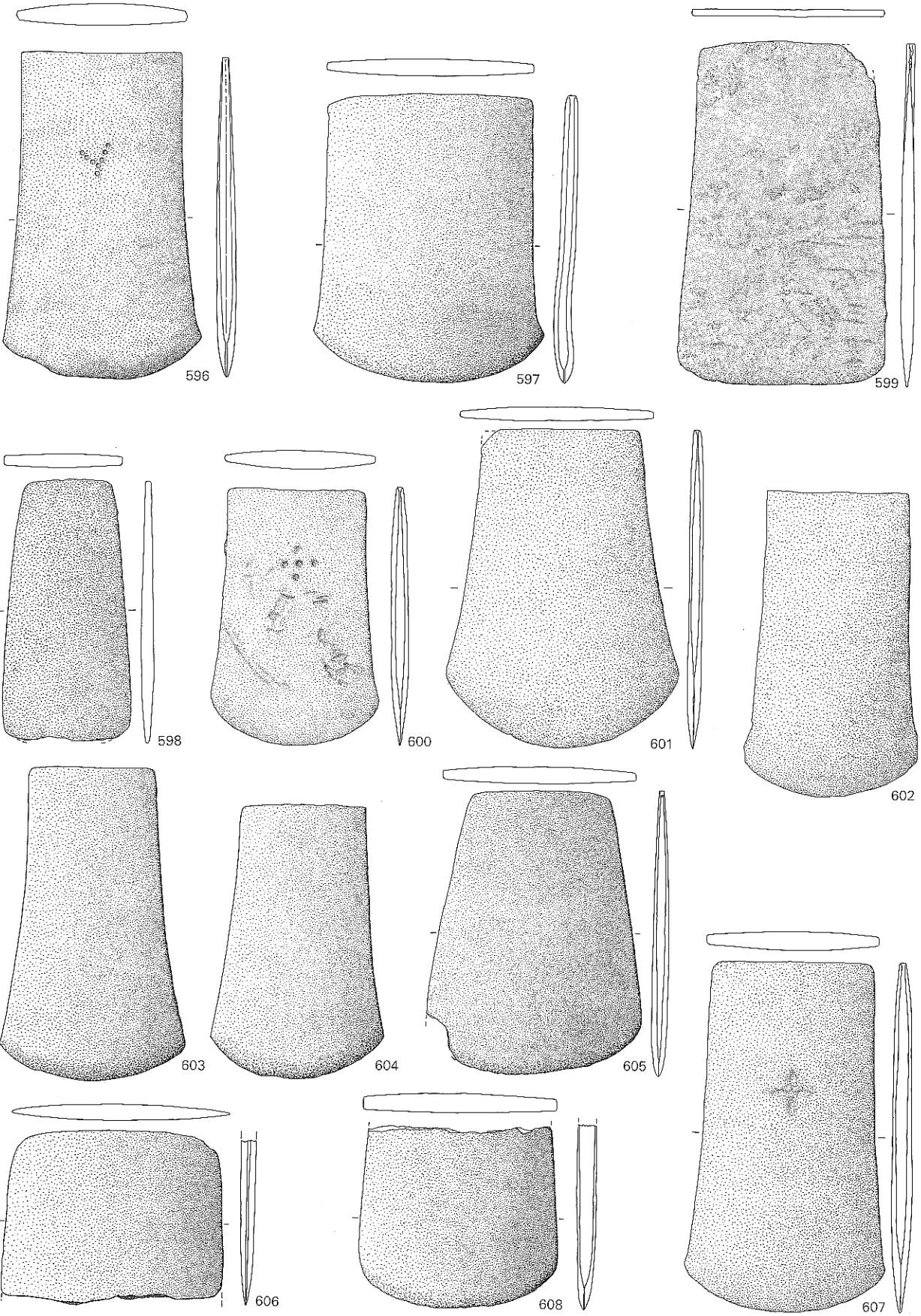
585



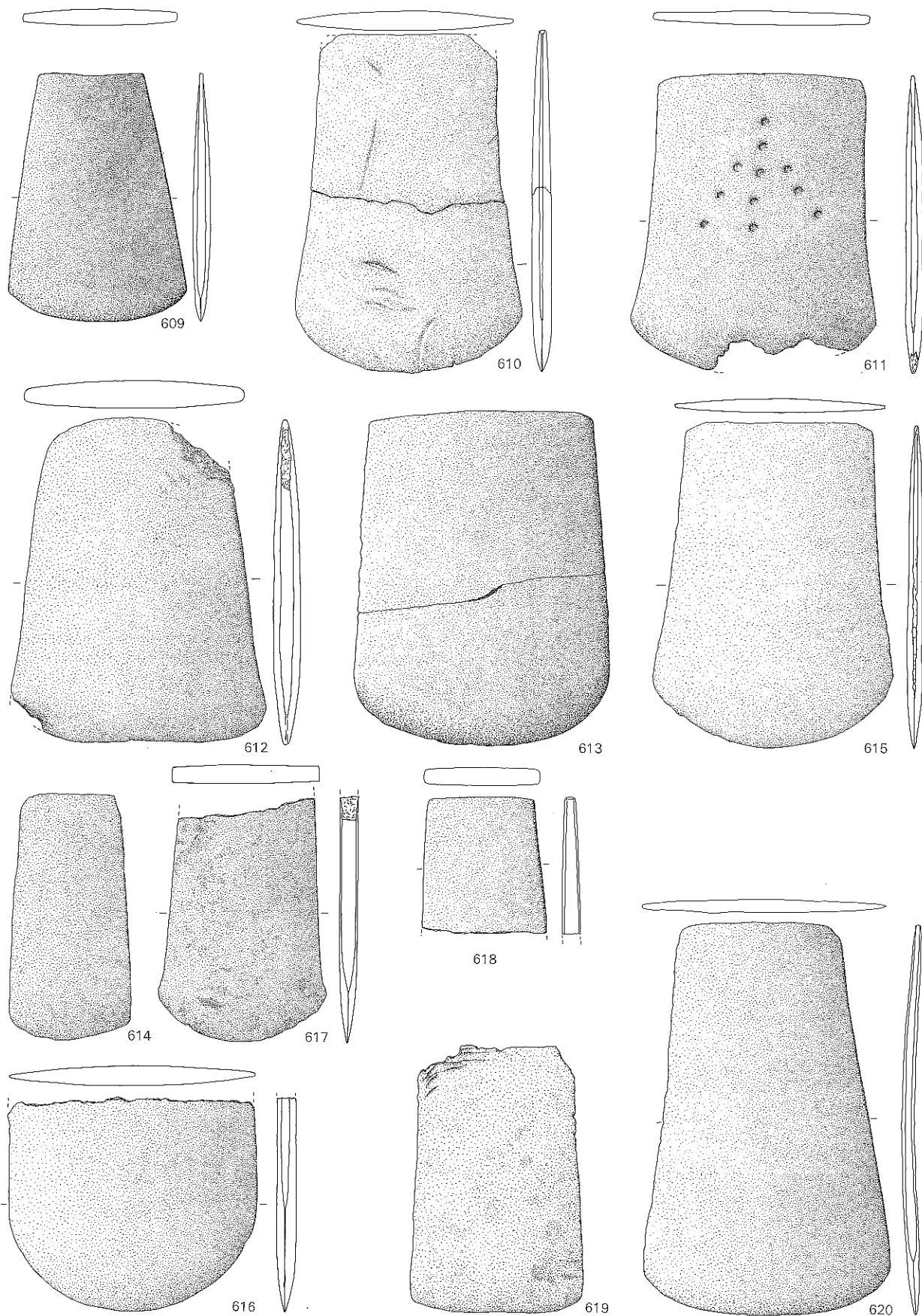


586-589 Rewari; 590 Bhiwani; 591-595 Bithur.

Scale 1 : 3

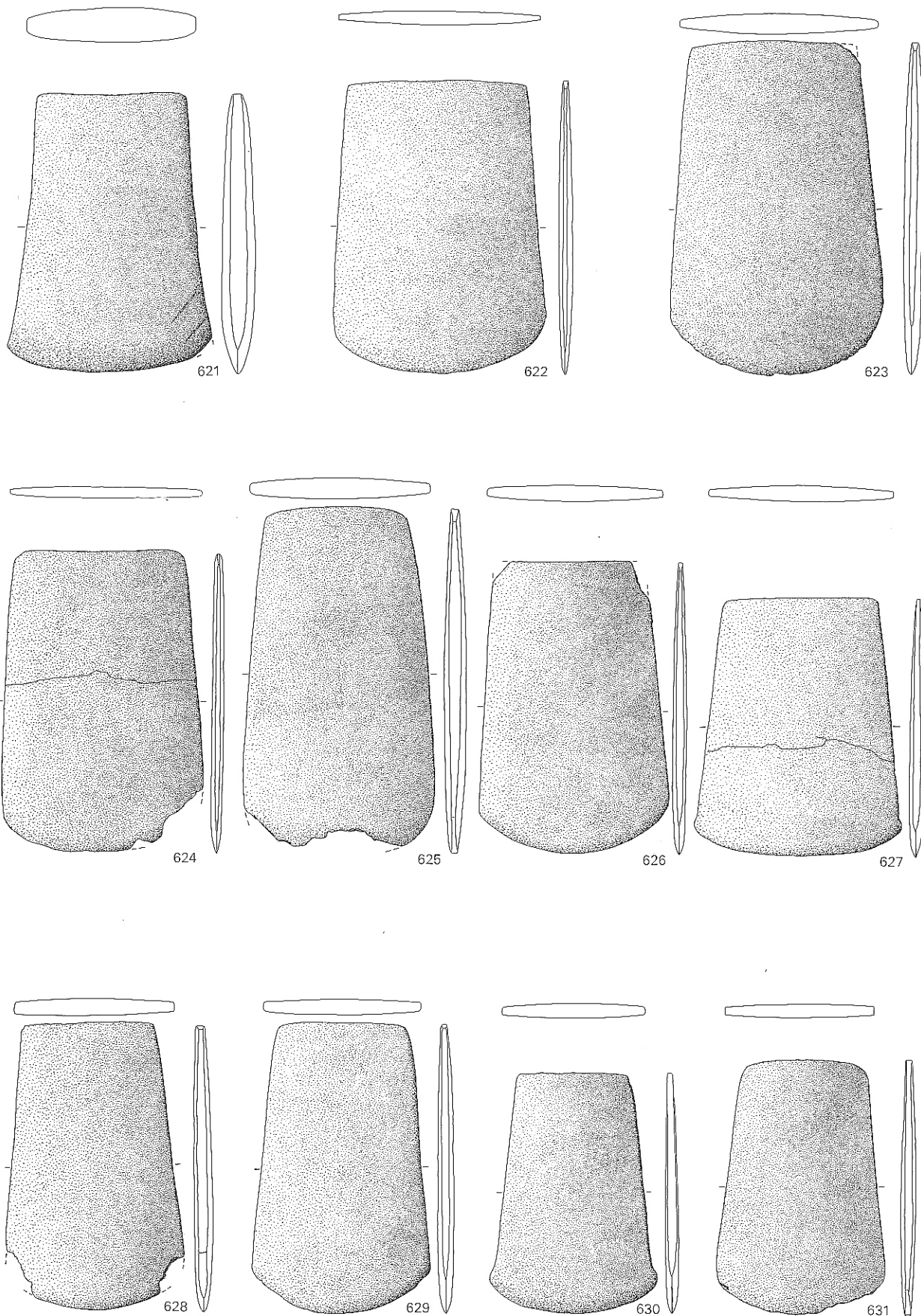


596–604 Bithur; 605 Dadari; 606 Deoti; 607 Dist. Gorakhpur (?); 608 Hansi. – (603,604 after Shastri).  
Scale 1 : 3



609 Hansi; 610 Hardi; 611 Kosam; 612 Mujahidpur; 613 Mathura; 614 Nankom; 615–618 Prov. unknown; 619 Ramjipura; 620 Rewari. – (613 after Cunningham; 614 after Roy; 619 after Krishna).

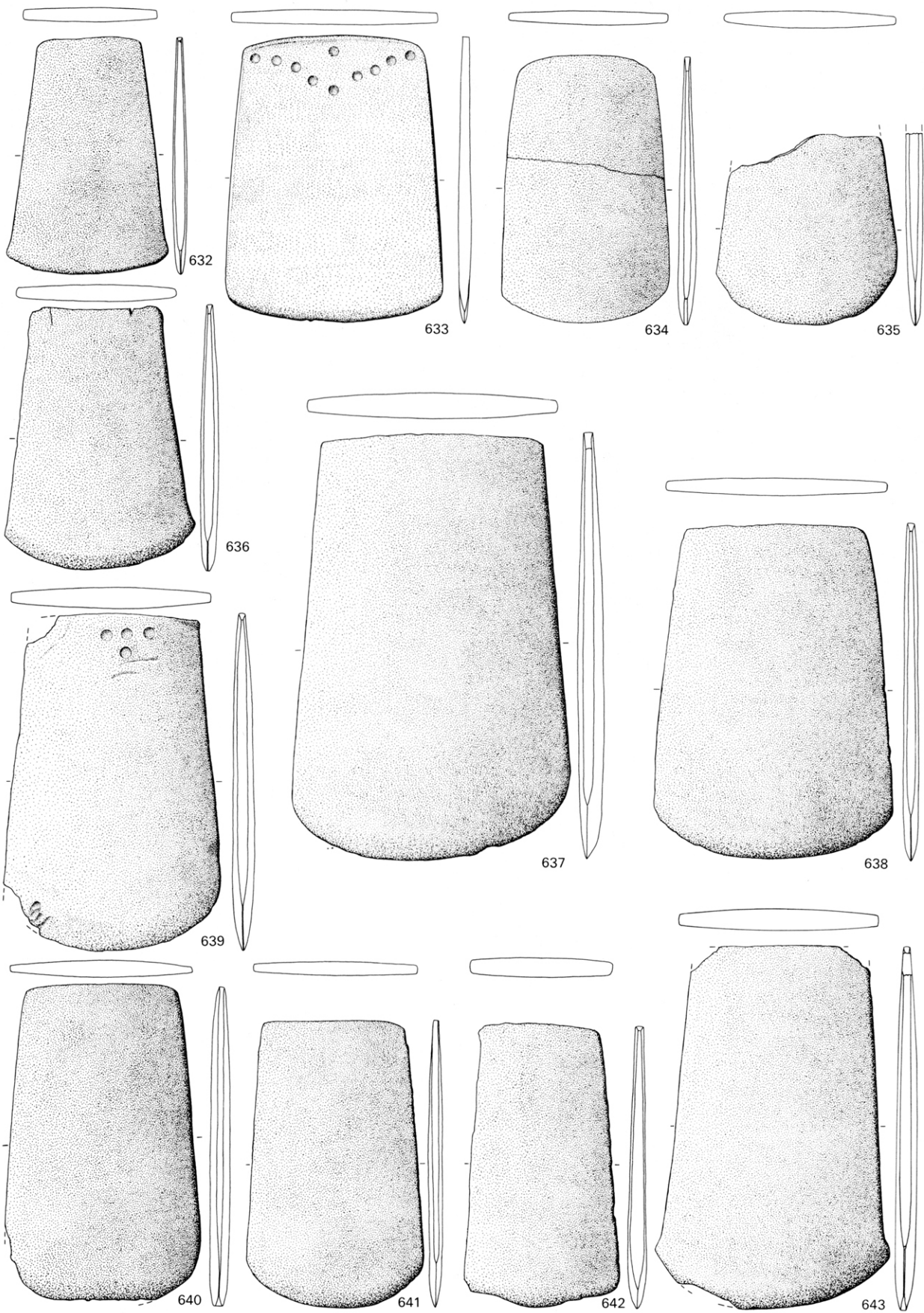
Scale 1 : 3



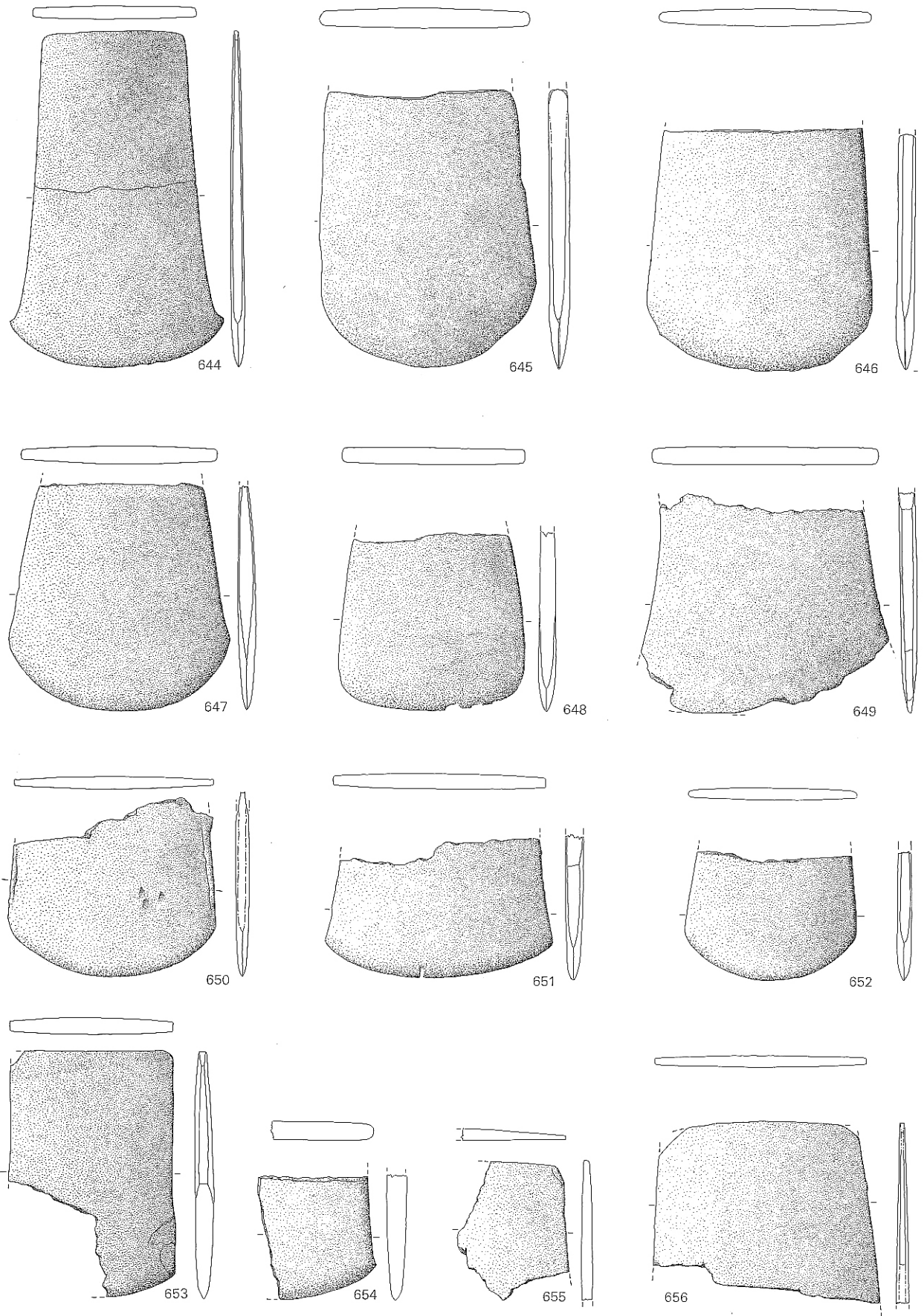
620-631 Rewari.

Scale 1 : 3



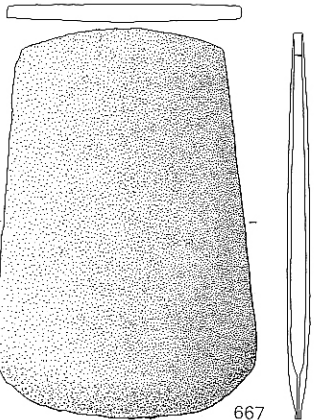
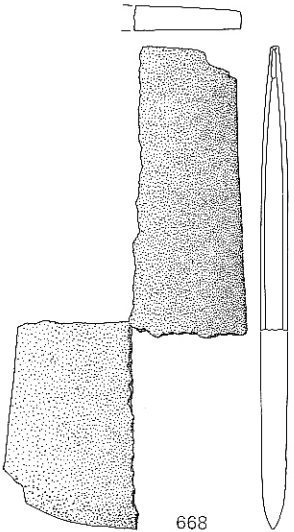
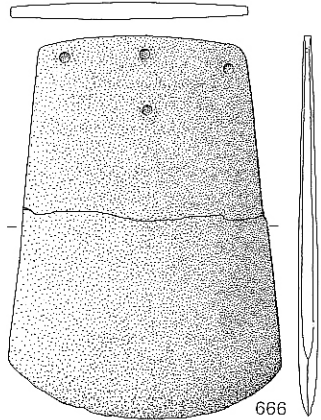
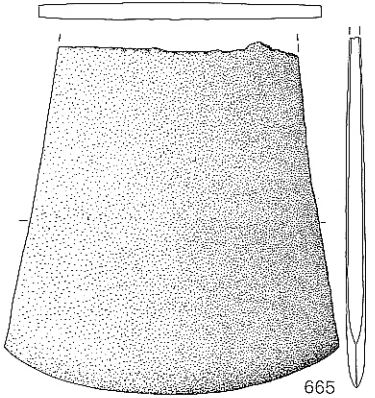
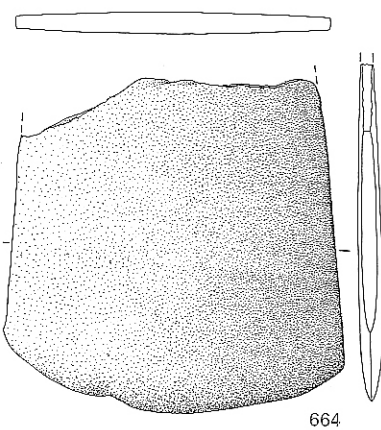
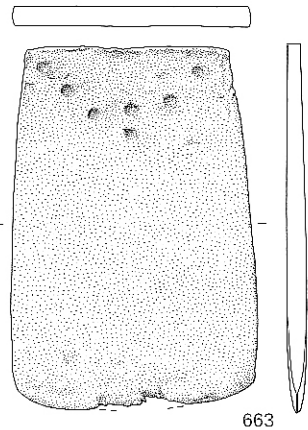
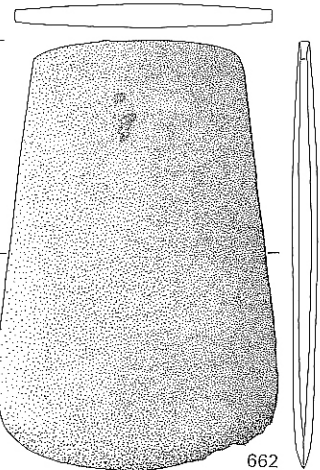
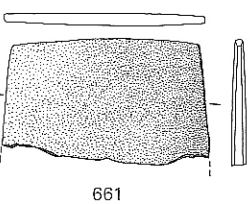
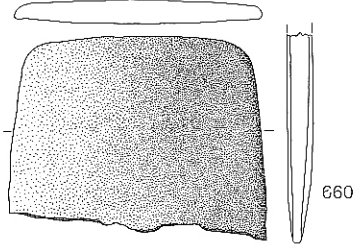
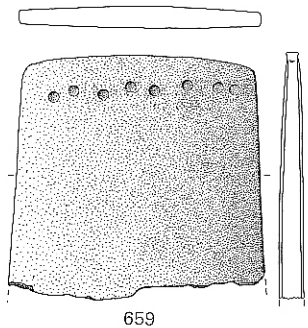
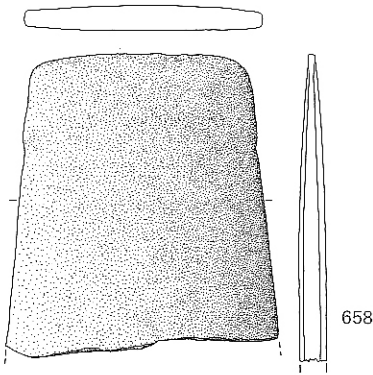
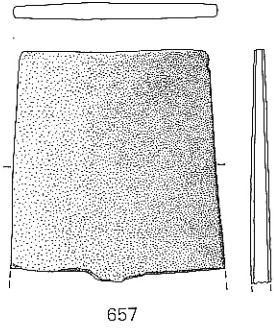


632-643 Rewari.  
Scale 1 : 3



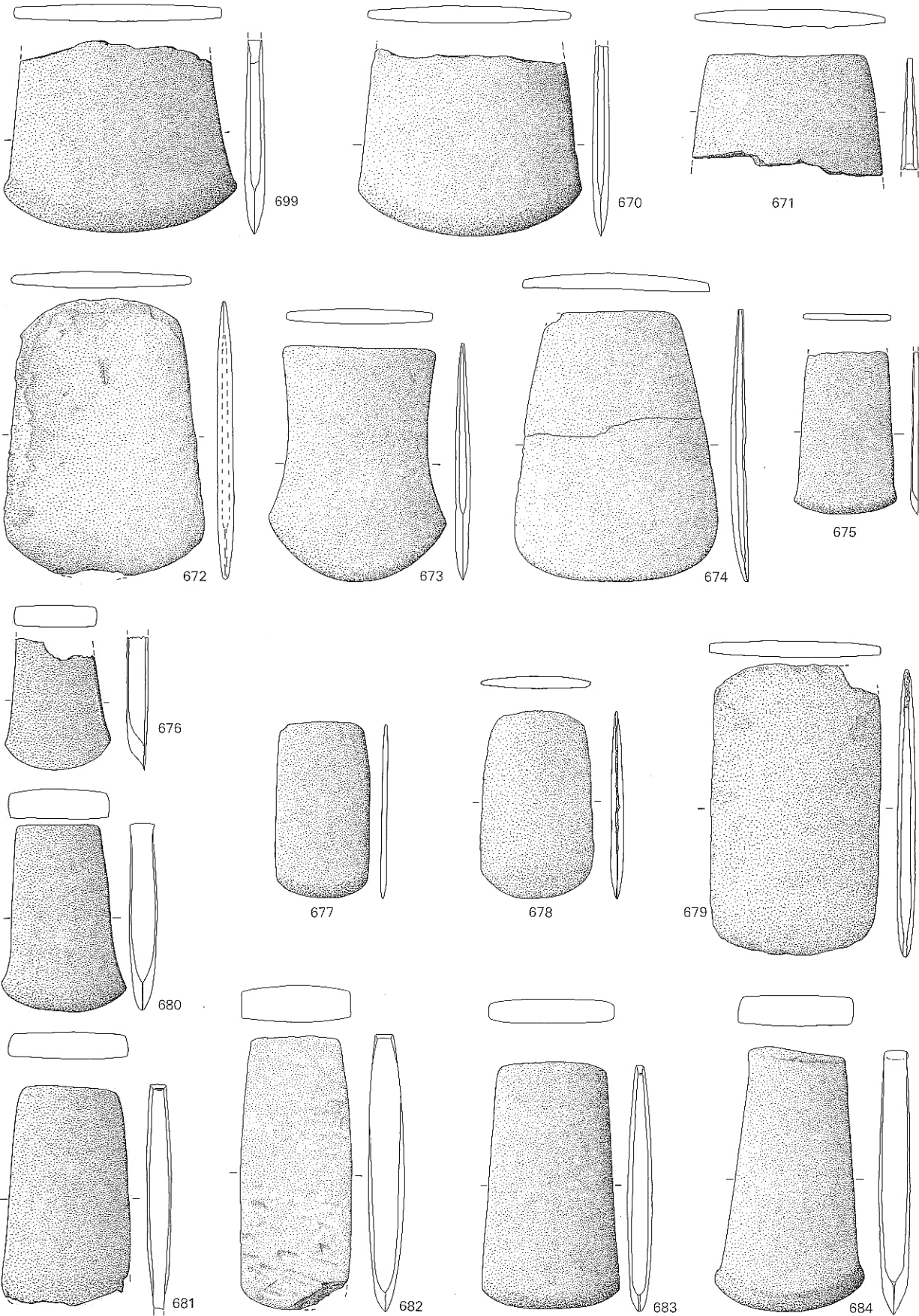
644-656 Rewari.

Scale 1 : 3



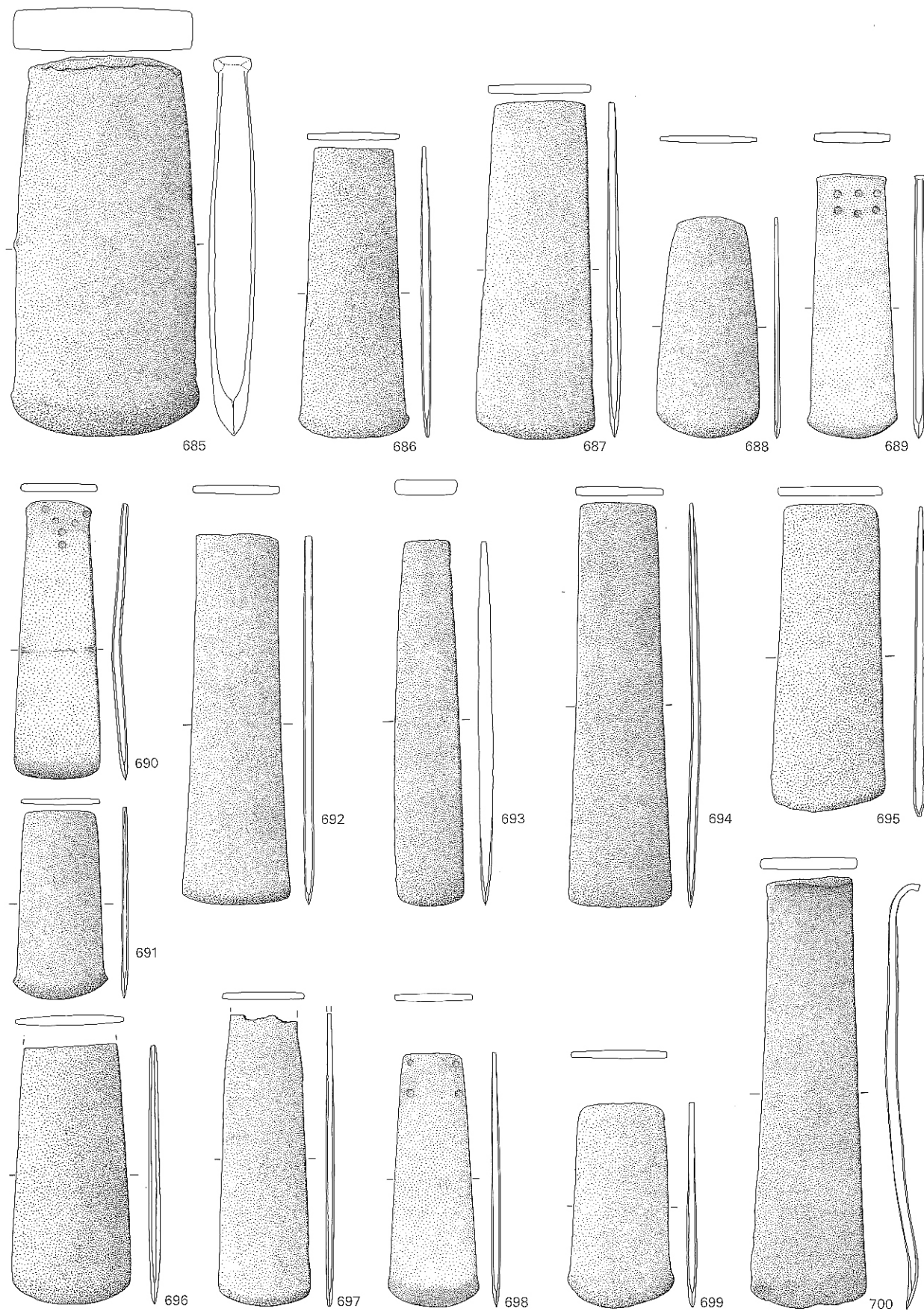
657-668 Rewari.  
Scale 1 : 3





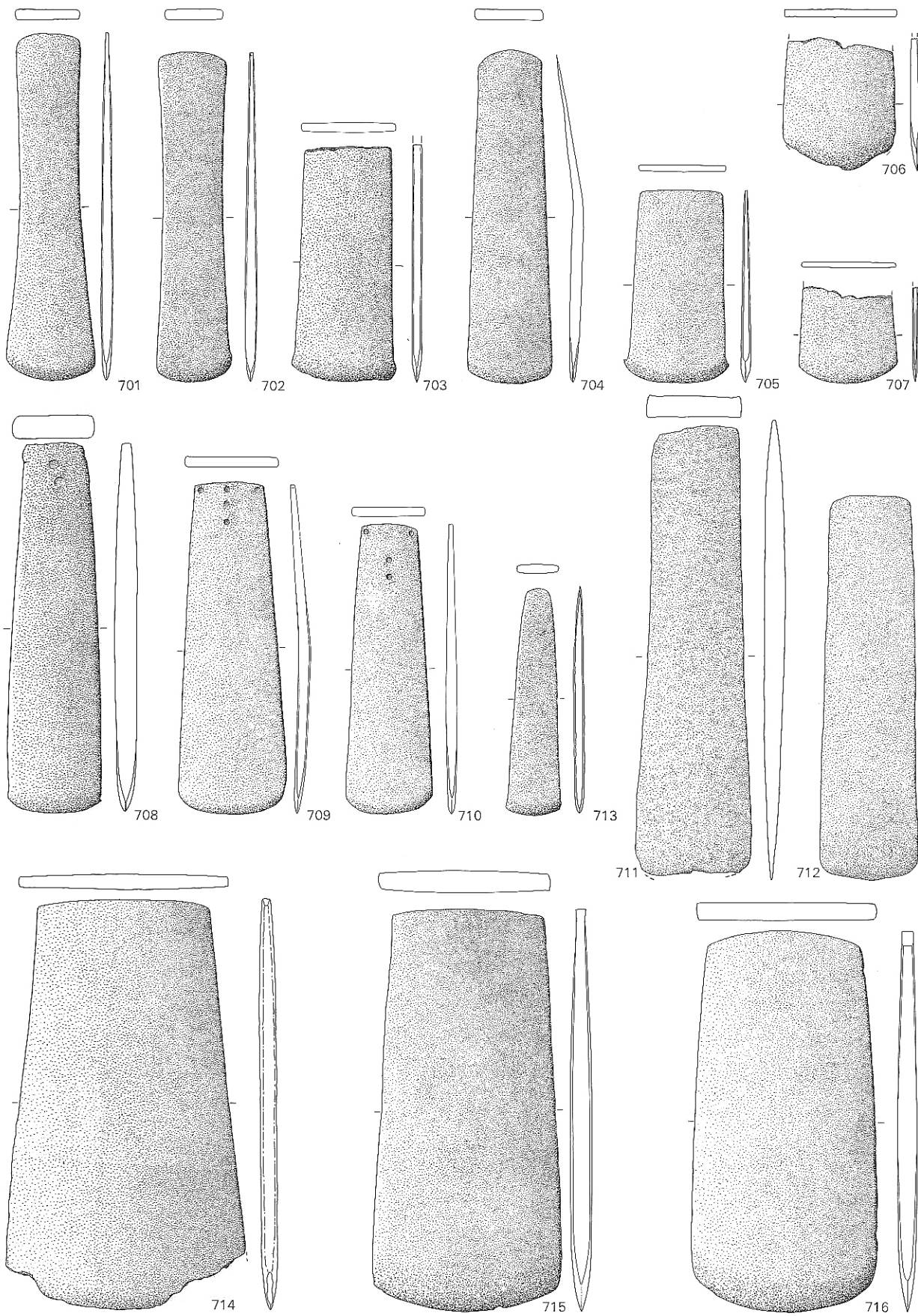
669–671.673–676.683.684 Rewari; 672.679 Shahabad area; 677 Bithur; 678 Mahuadanr; 680 Bhiwani; 681.682 Hansi.

Scale 1 : 3



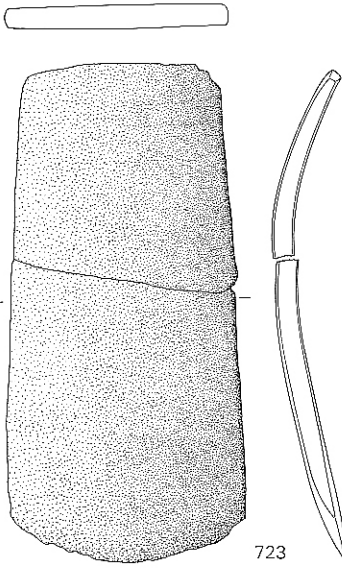
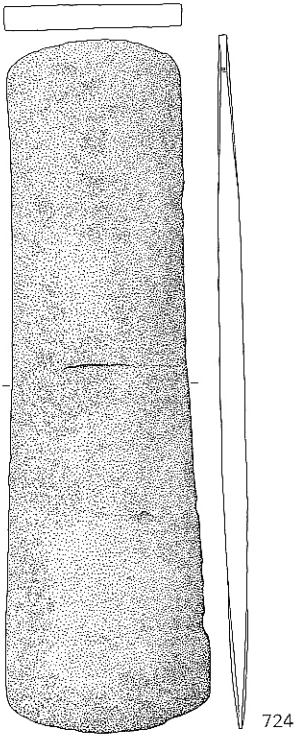
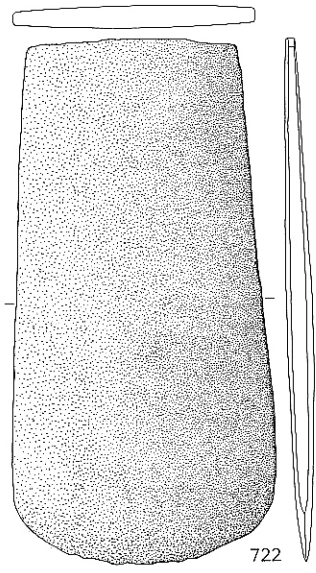
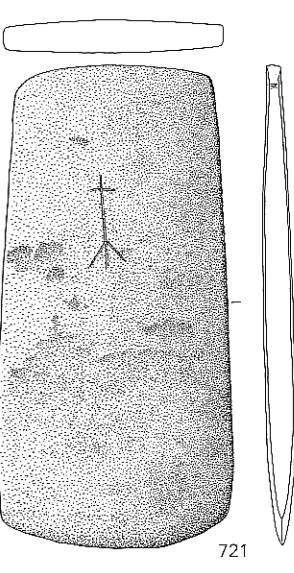
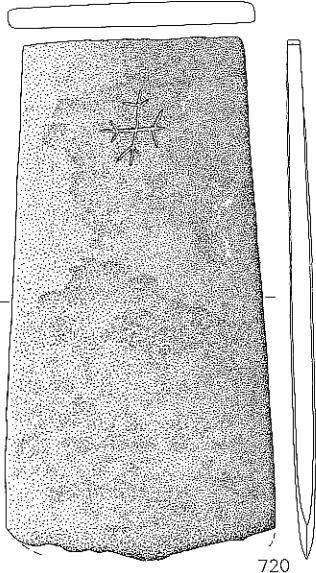
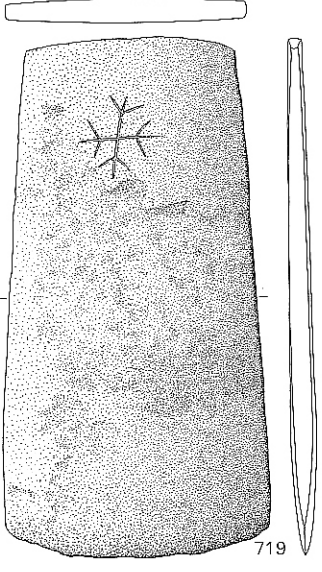
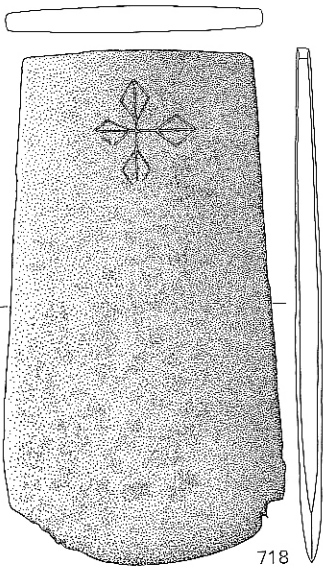
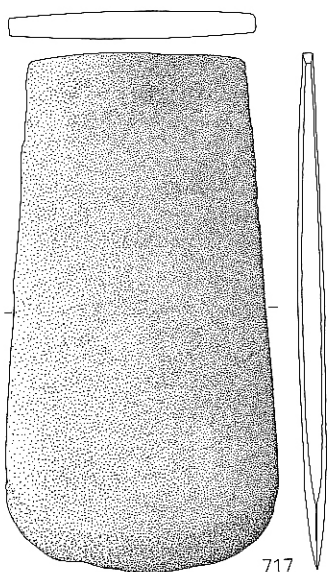
685, 689–700 Rewari; 686–688 Hansi.

Scale 1 : 3



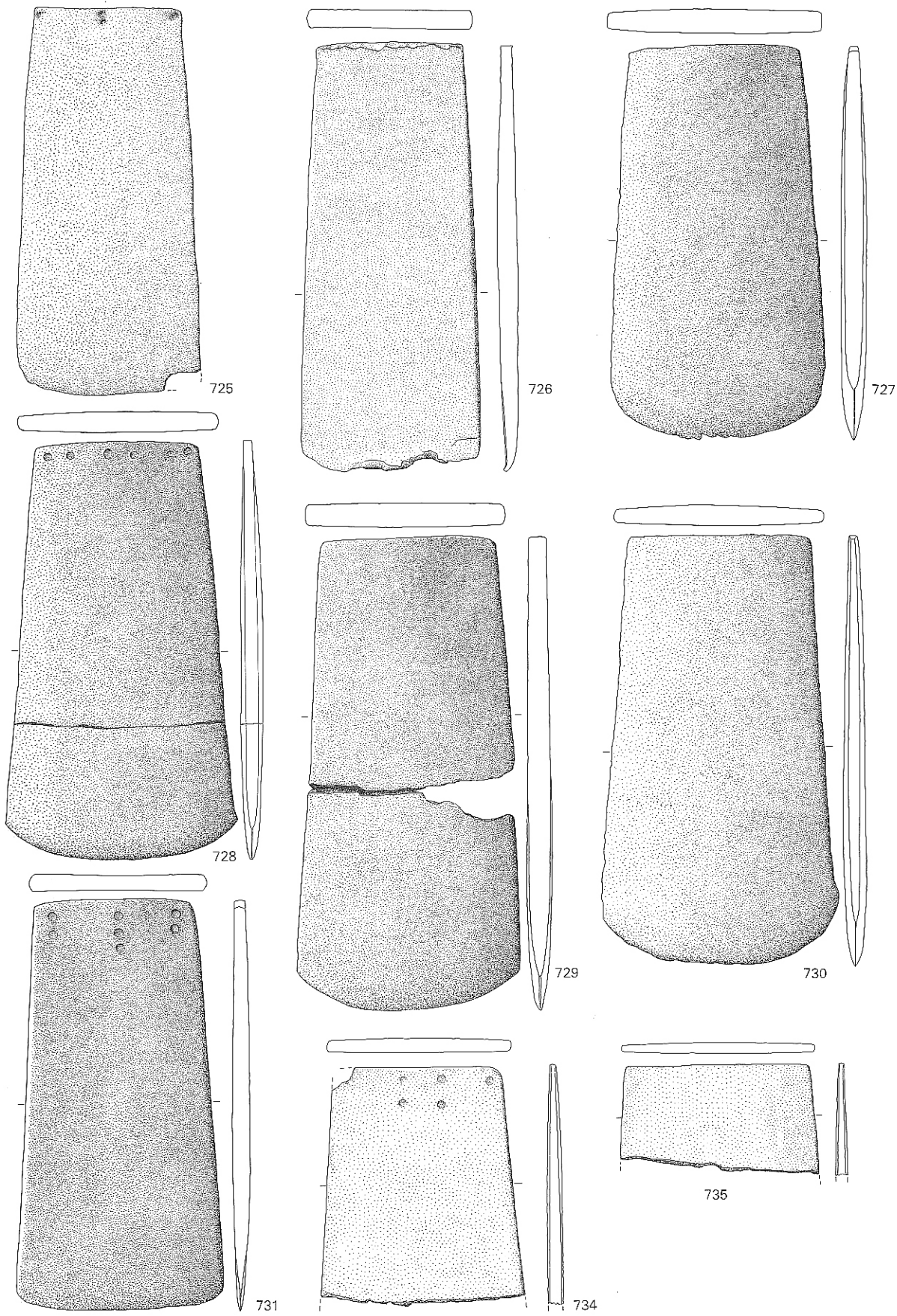
701-711 Rewari; 712 Shahabad area; 713 Kosam; 714 Bhiwani; 715, 716 Hansi.

Scale 1 : 3

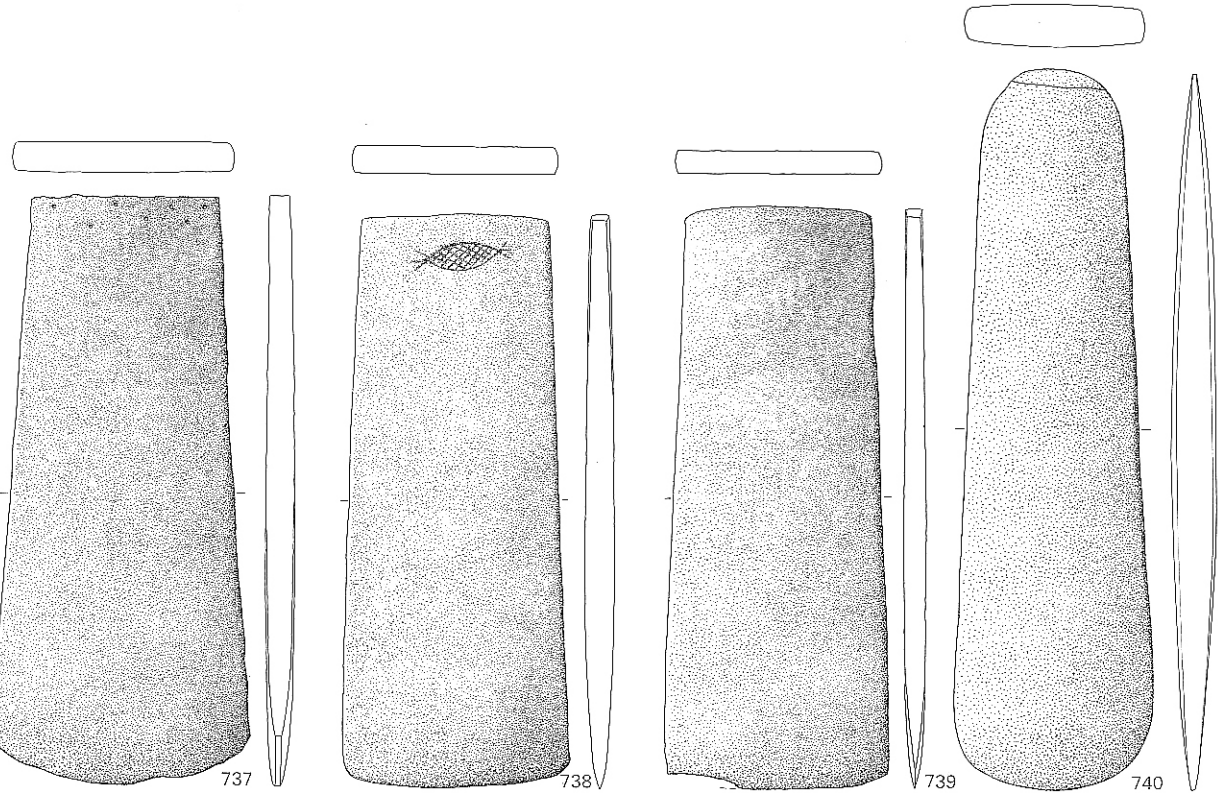
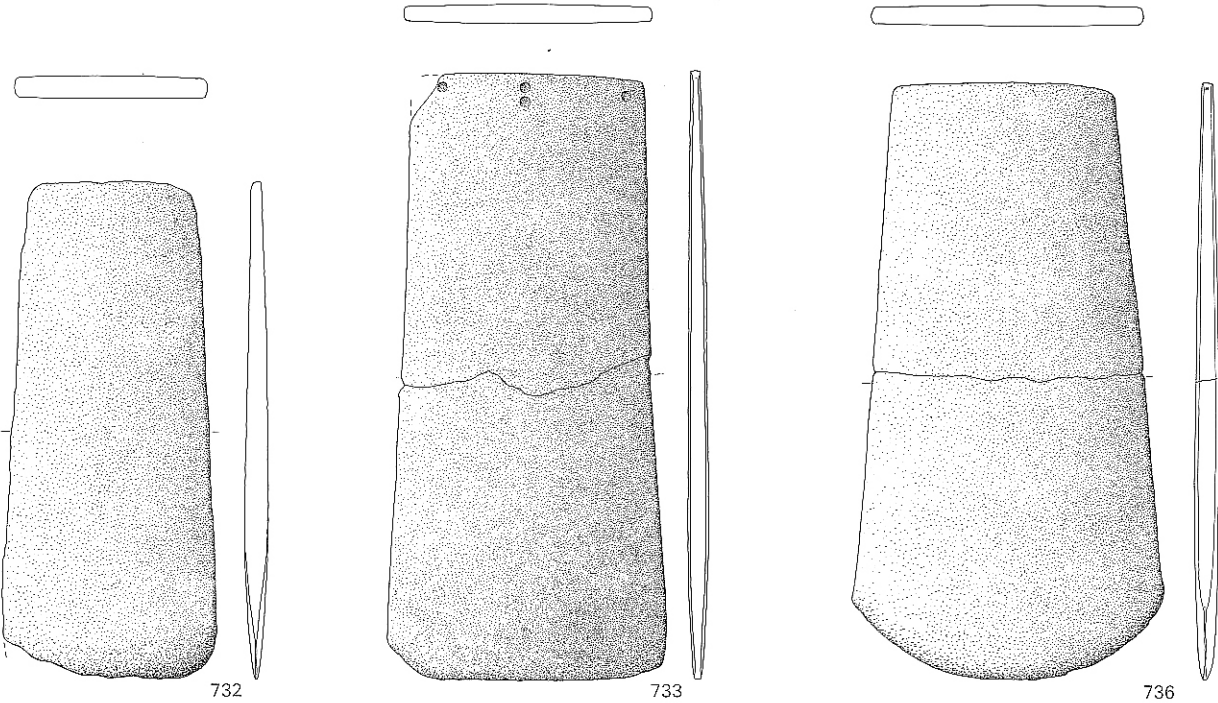


717-724 Hansi.  
Scale 1 : 3

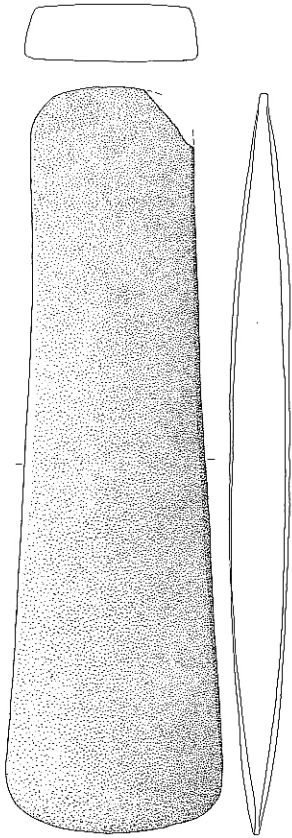




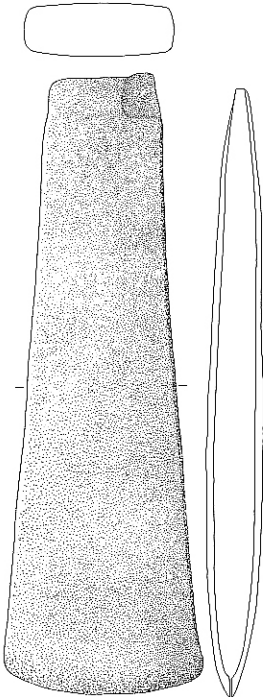
725 Kulhade-ka-Johade; 726-731.734-735 (Rewari. - (725 after Agrawal).  
Scale 1 : 3



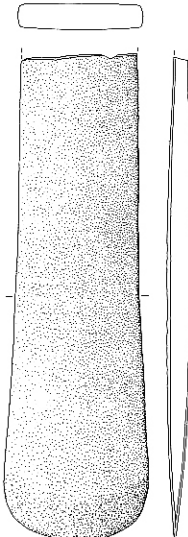
732.733.736.737.740 Rewari; 738.739 Saunia.  
Scale 1 : 3



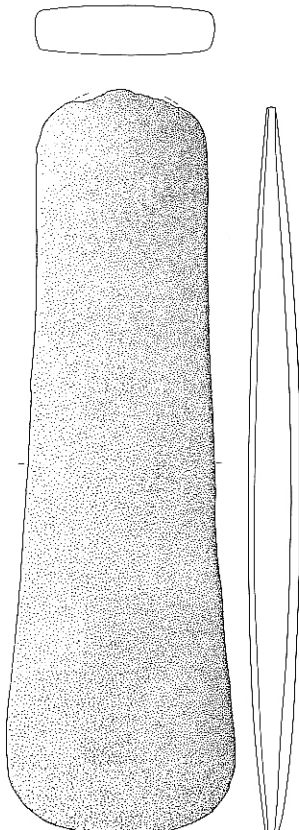
741



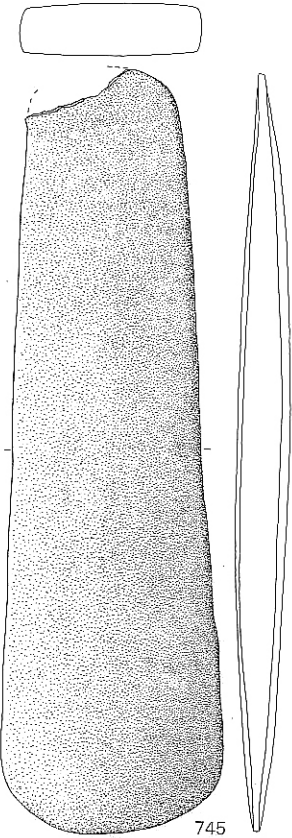
742



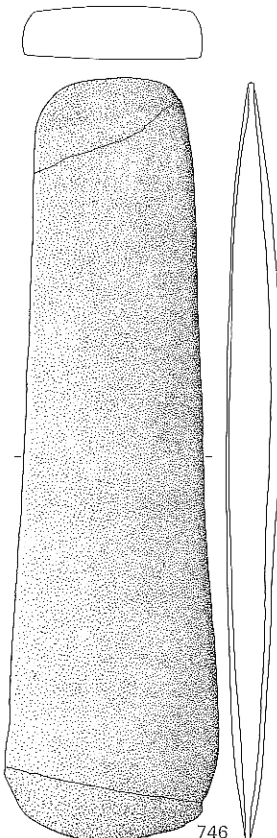
743



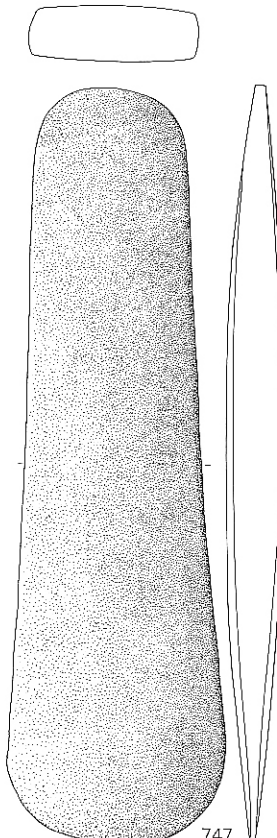
744



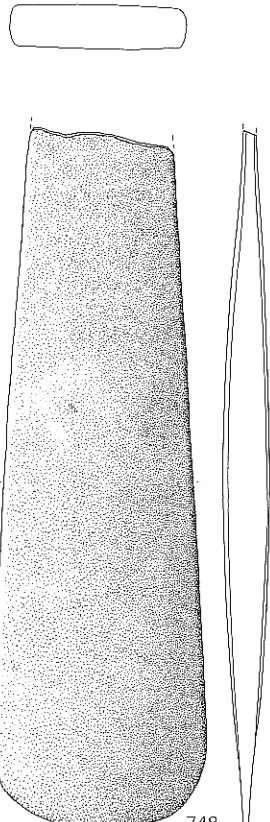
745



746

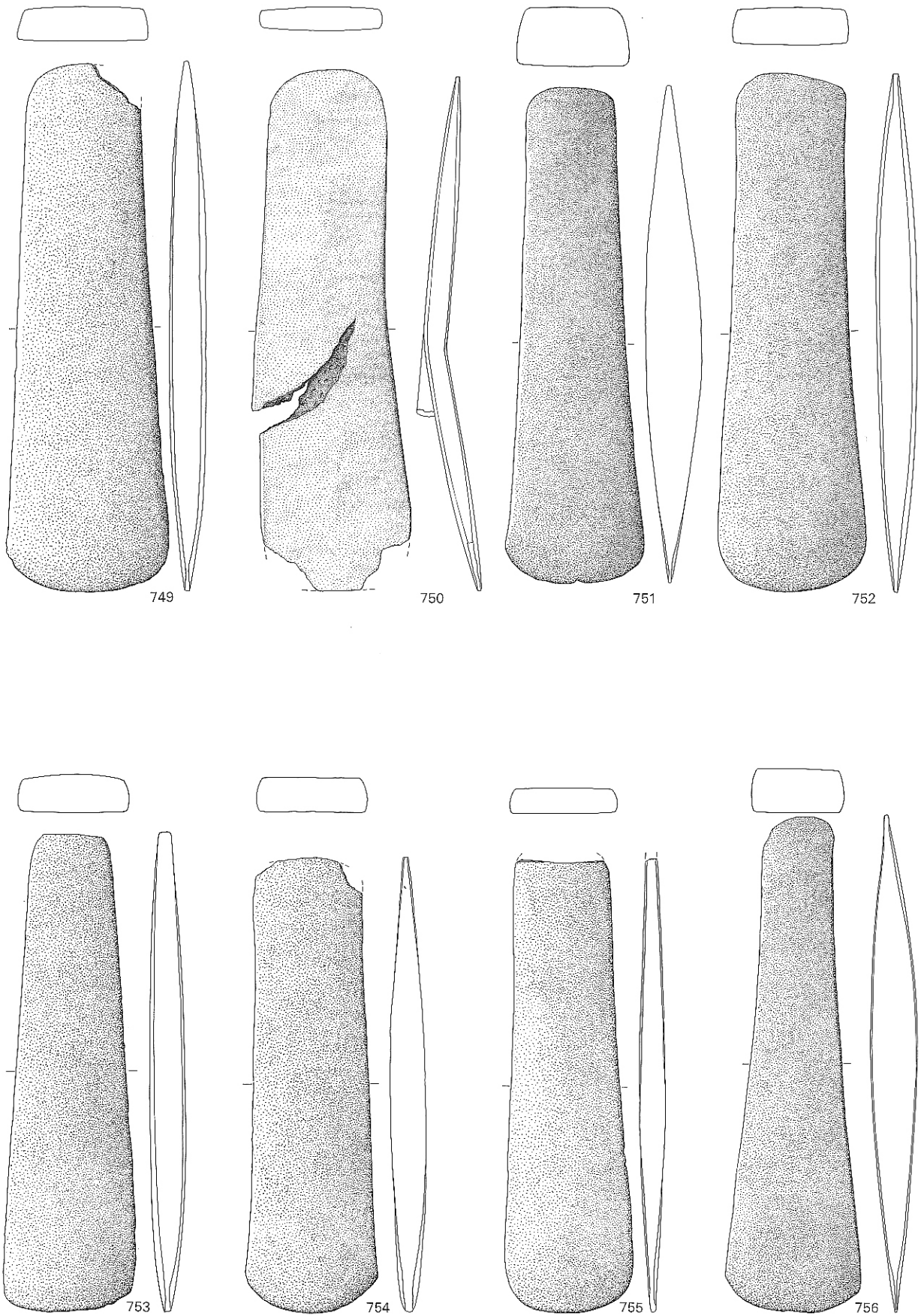


747

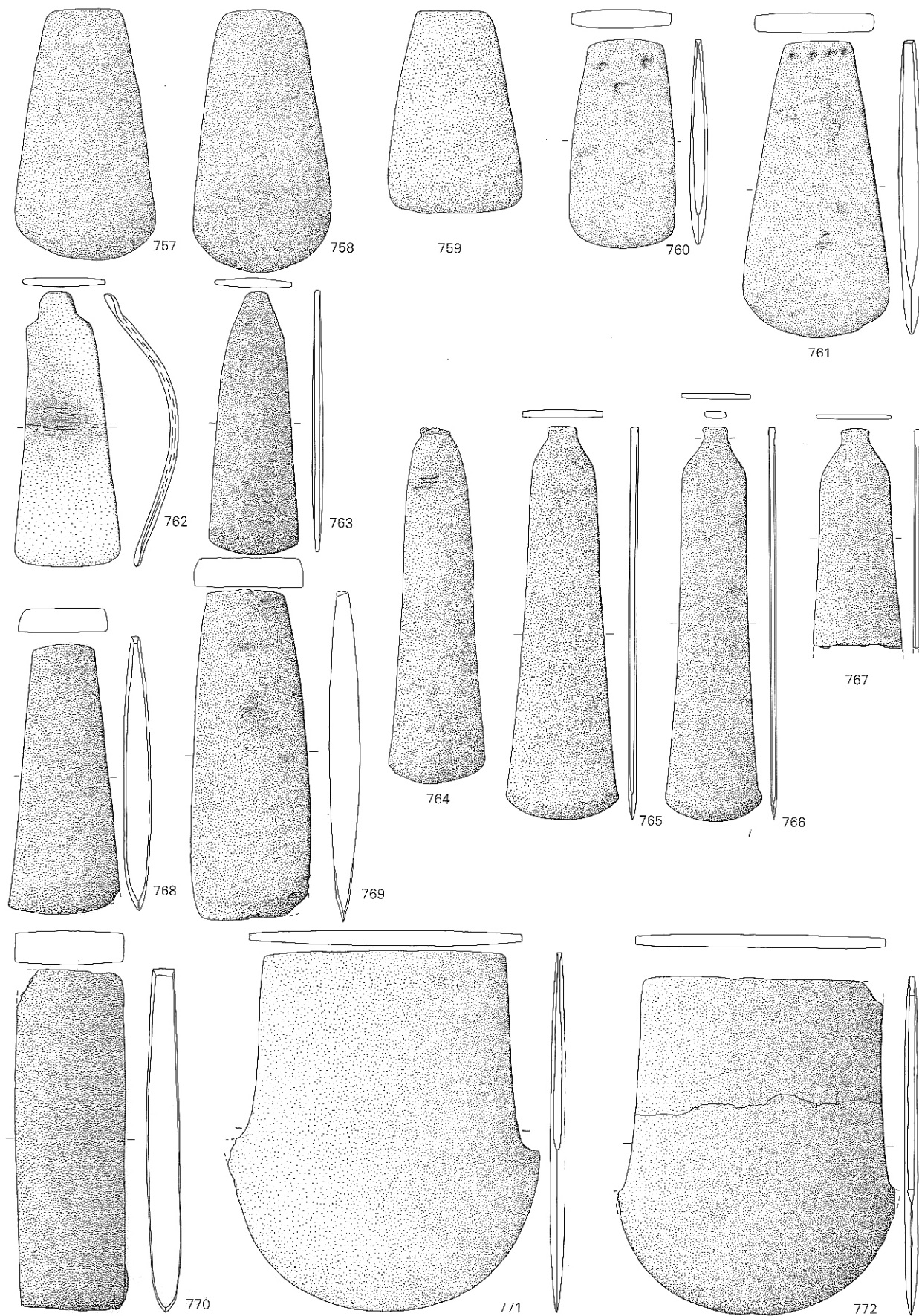


748



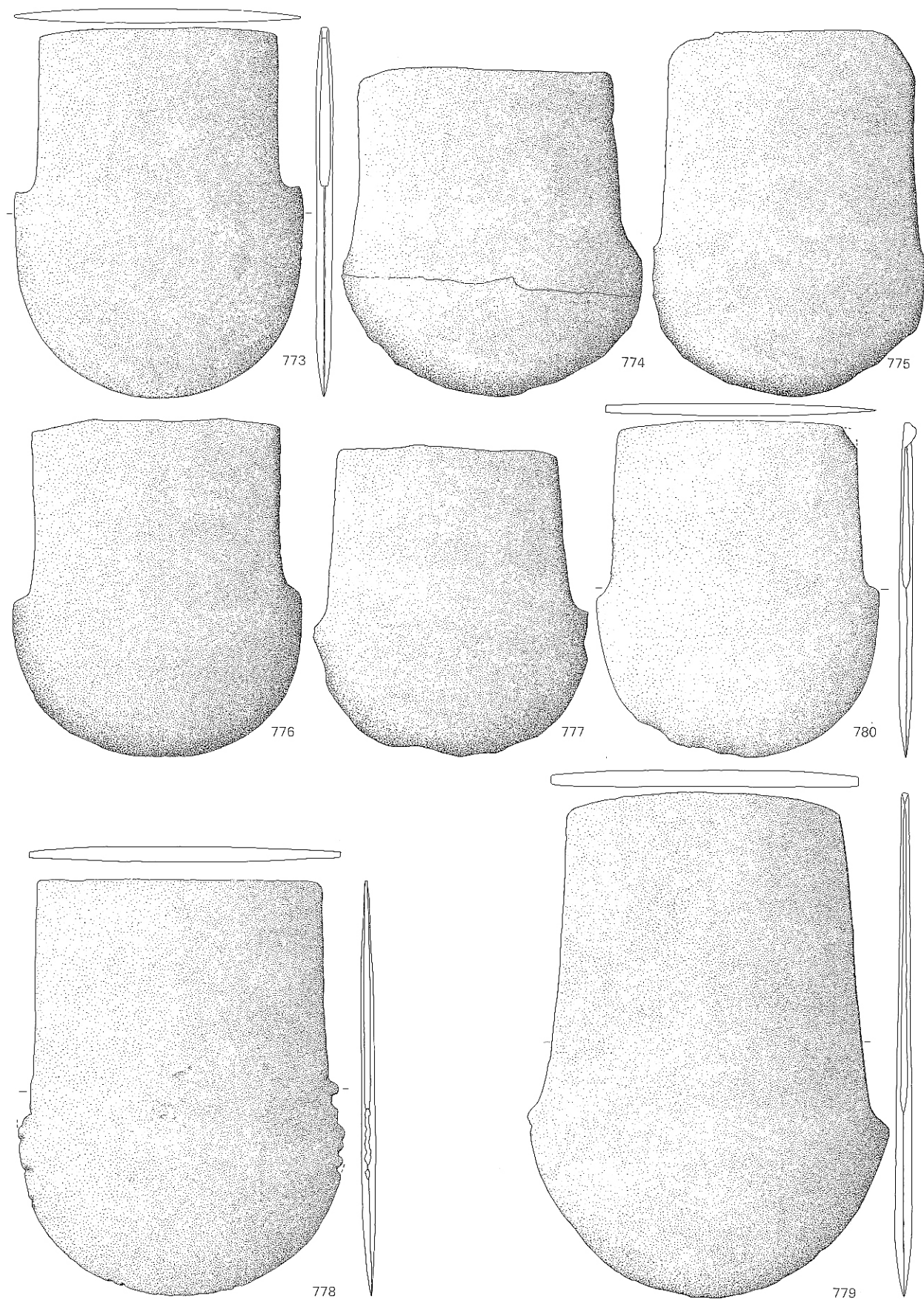


749-756 Rewari.  
Scale 1 : 3



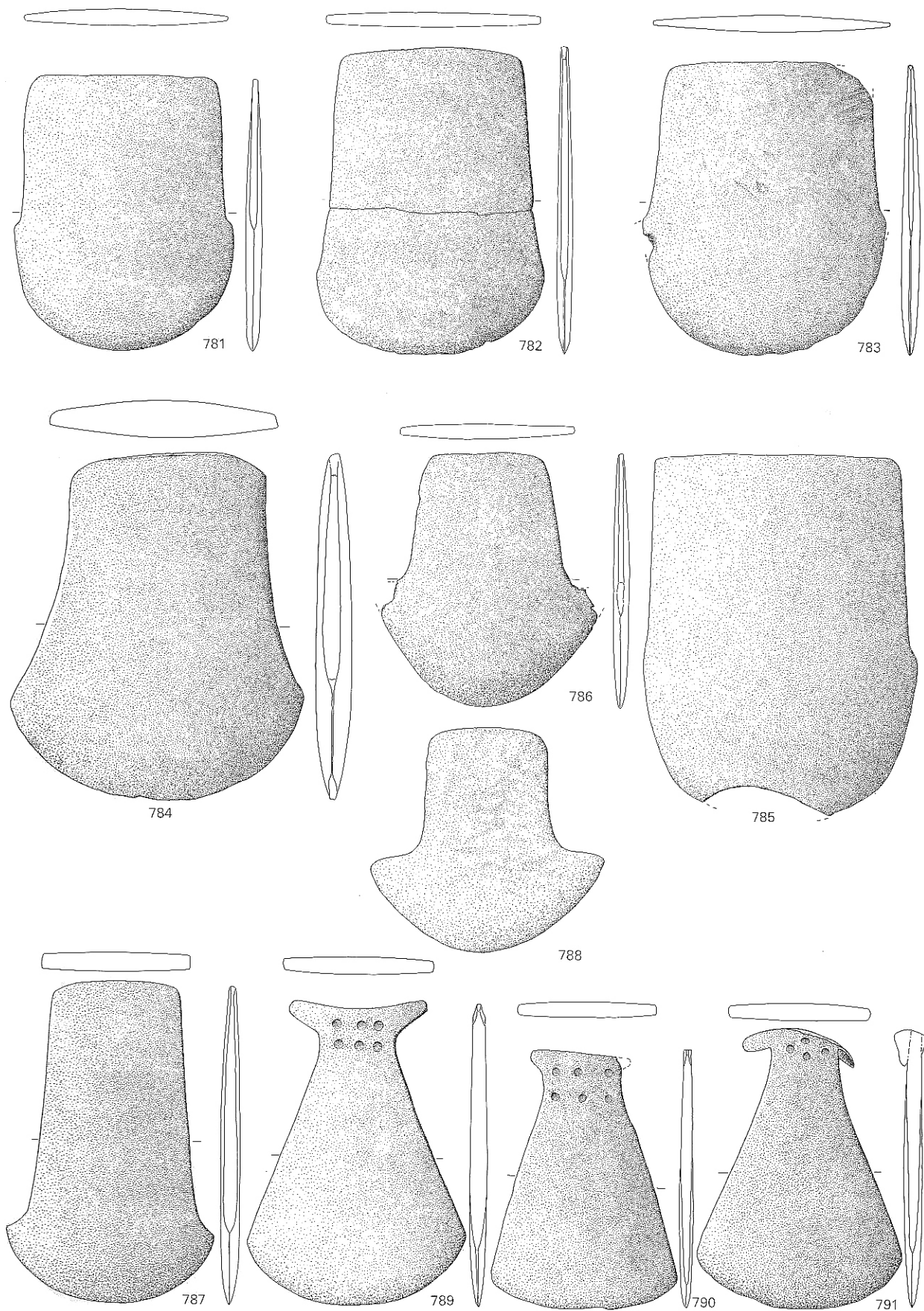
757-761 Shahabad area; 762, 763, 771, 772 Bithur; 764 Debakia; 765-770 Rewari. - (757-759 after Gupta; 764 after Trivedi).

Scale 1 : 3



773-777 Bithur; 778 Dist. Hardoi; 779 Indilapur; 780 Prov. unknown. - (774-777 after Smith).

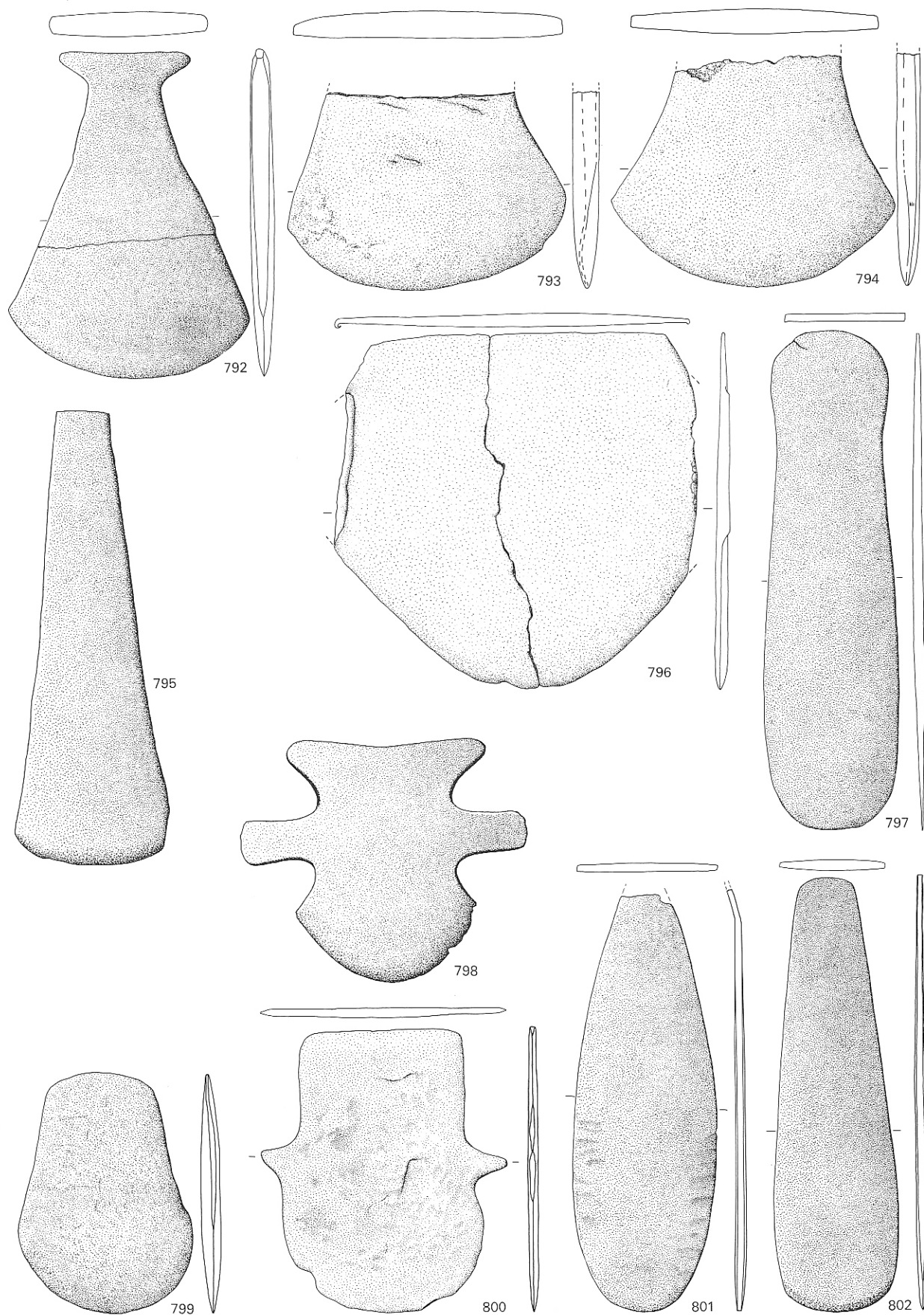
Scale 1 : 3



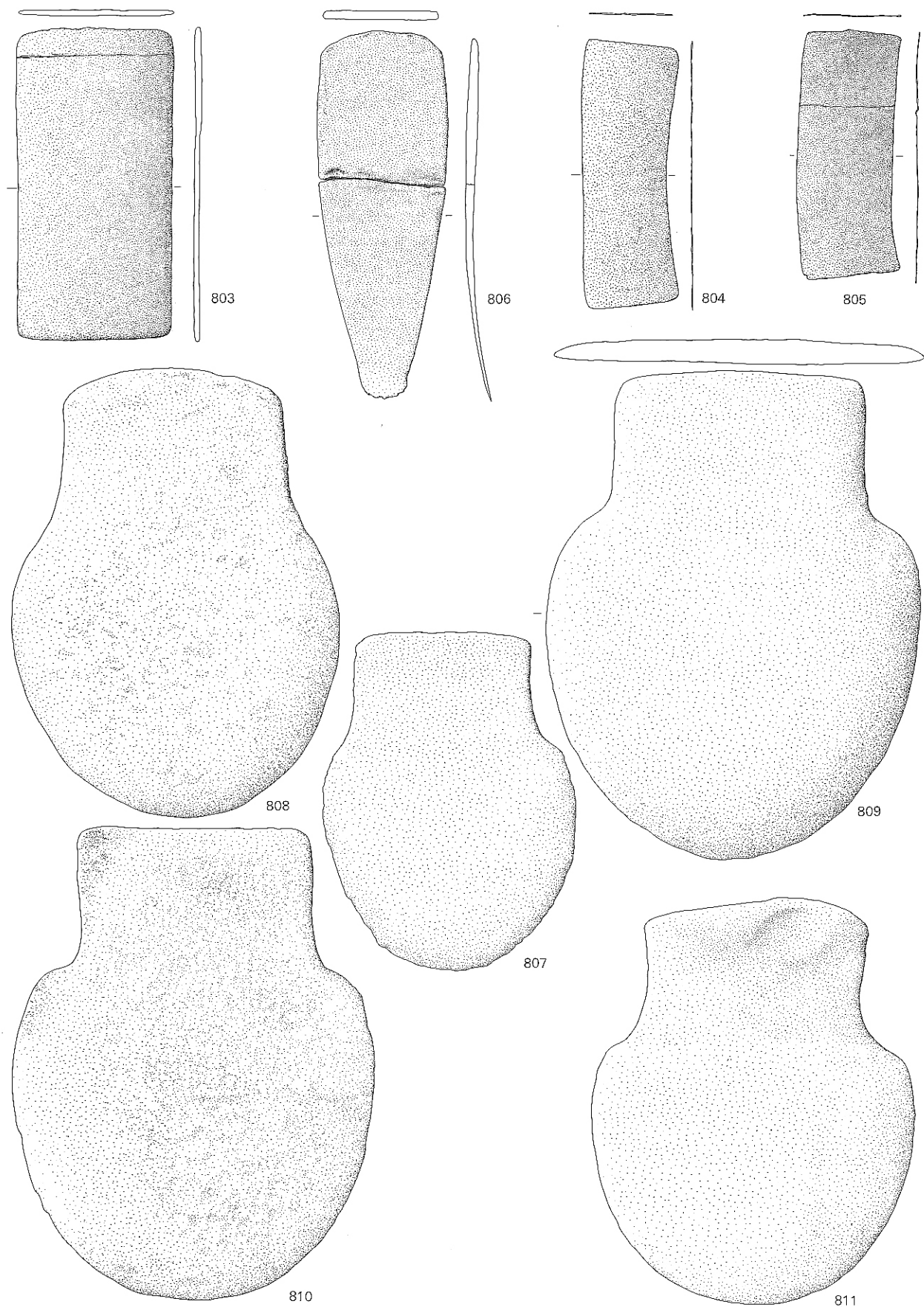
781, 782, 789–791 Rewari; 783, 785–787 Shahabad area; 784 Saguni; 788 Prov. unknown. – (785 after Gupta).

Scale 1 : 3



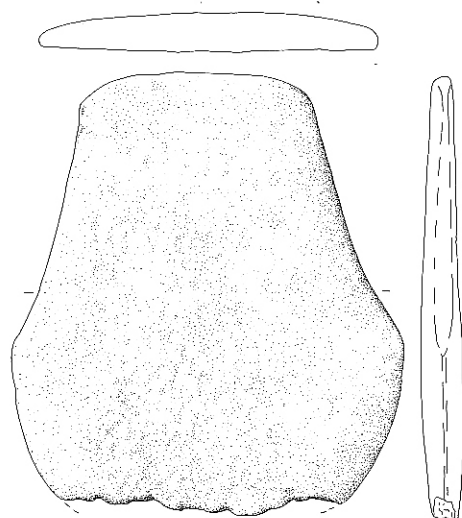


792.800-802 Rewari; 793.794 Chota Nagpur; 795 Bithur; 796 Bhiwani; 797 Hansi; 798 Katmandu valley; 799 Prov. unknown. - (795 after Smith; 798 after a photo).

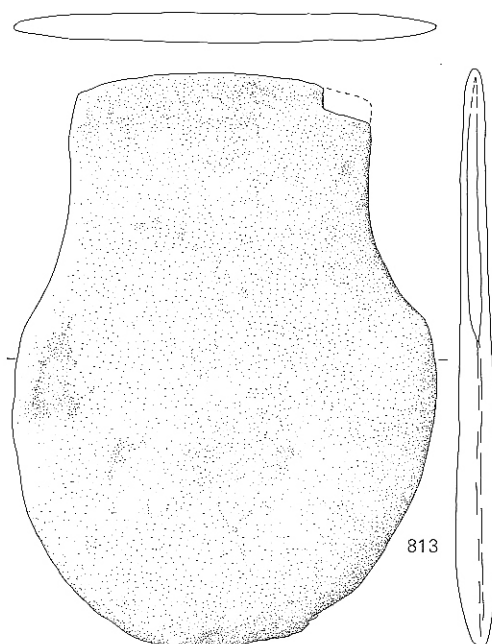


803-806 Rewari; 807.808 Chota Nagpur; 809.810 Dist. Manbhum; 811 P.S. Bassia.

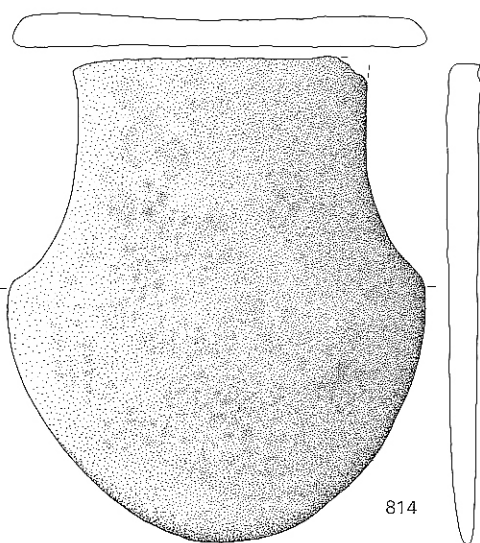
Scale 1 : 3



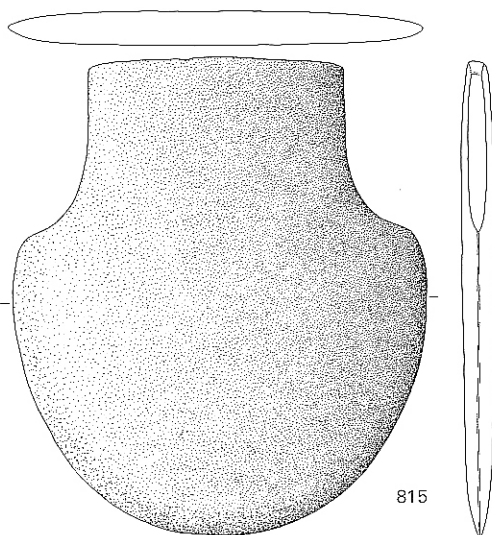
812



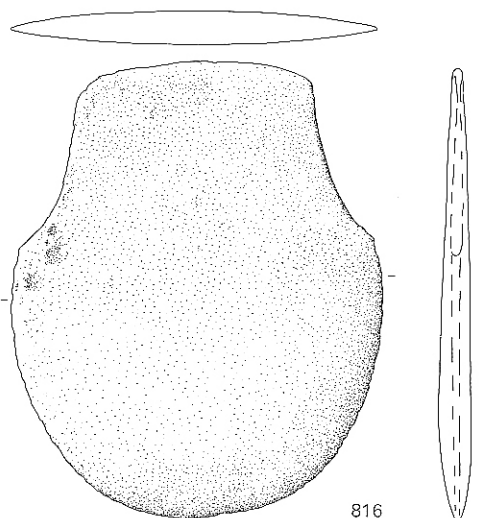
813



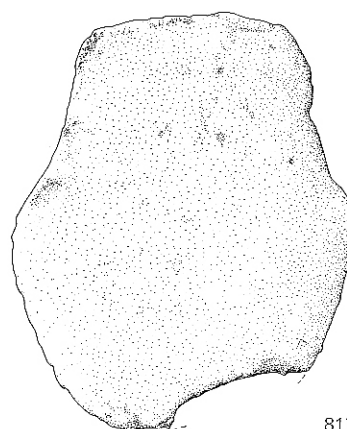
814



815



816

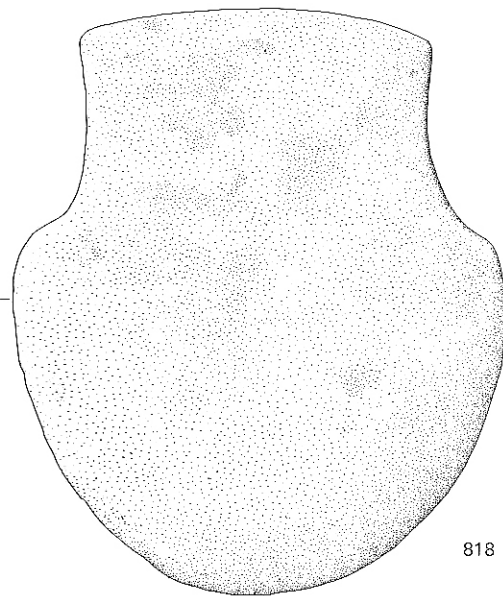
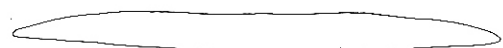


817

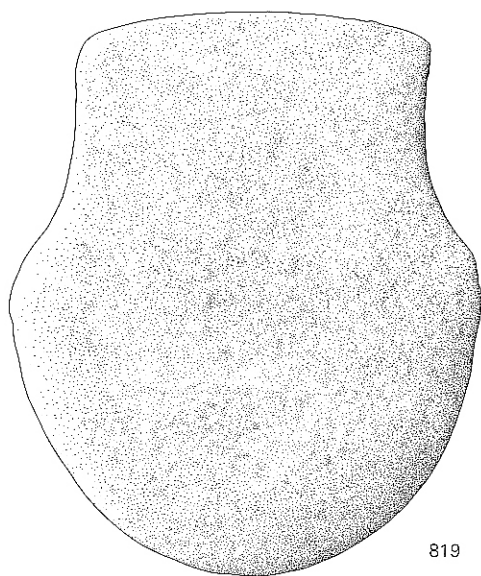
812 Thania [P.S.] Bassia; 813 Prov. unknown 814 Rewari; 815 Near Tamajuri; 816.817 Chota Nagpur.

Scale 1 : 3

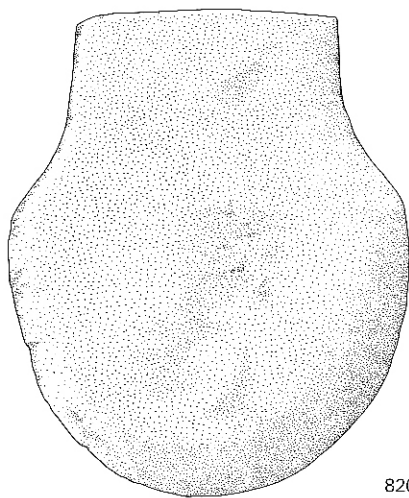
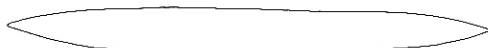




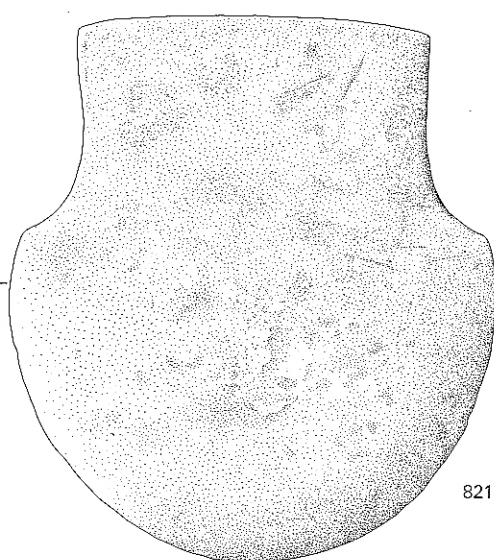
818



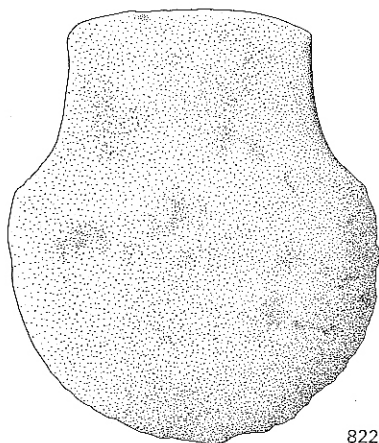
819



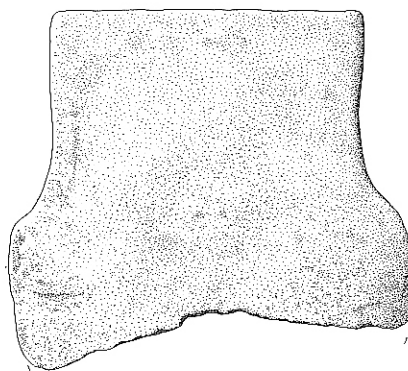
820



821



822

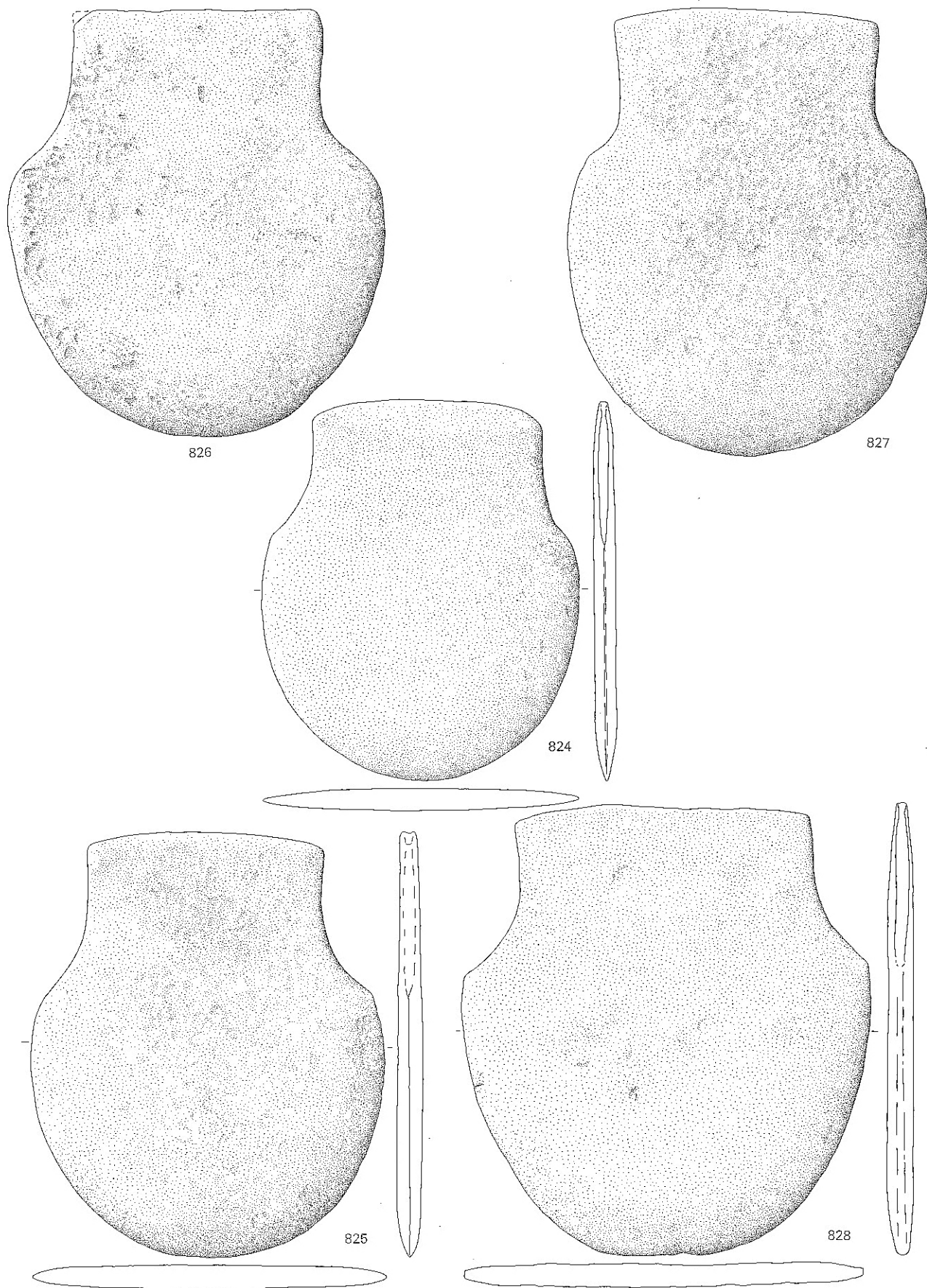


823



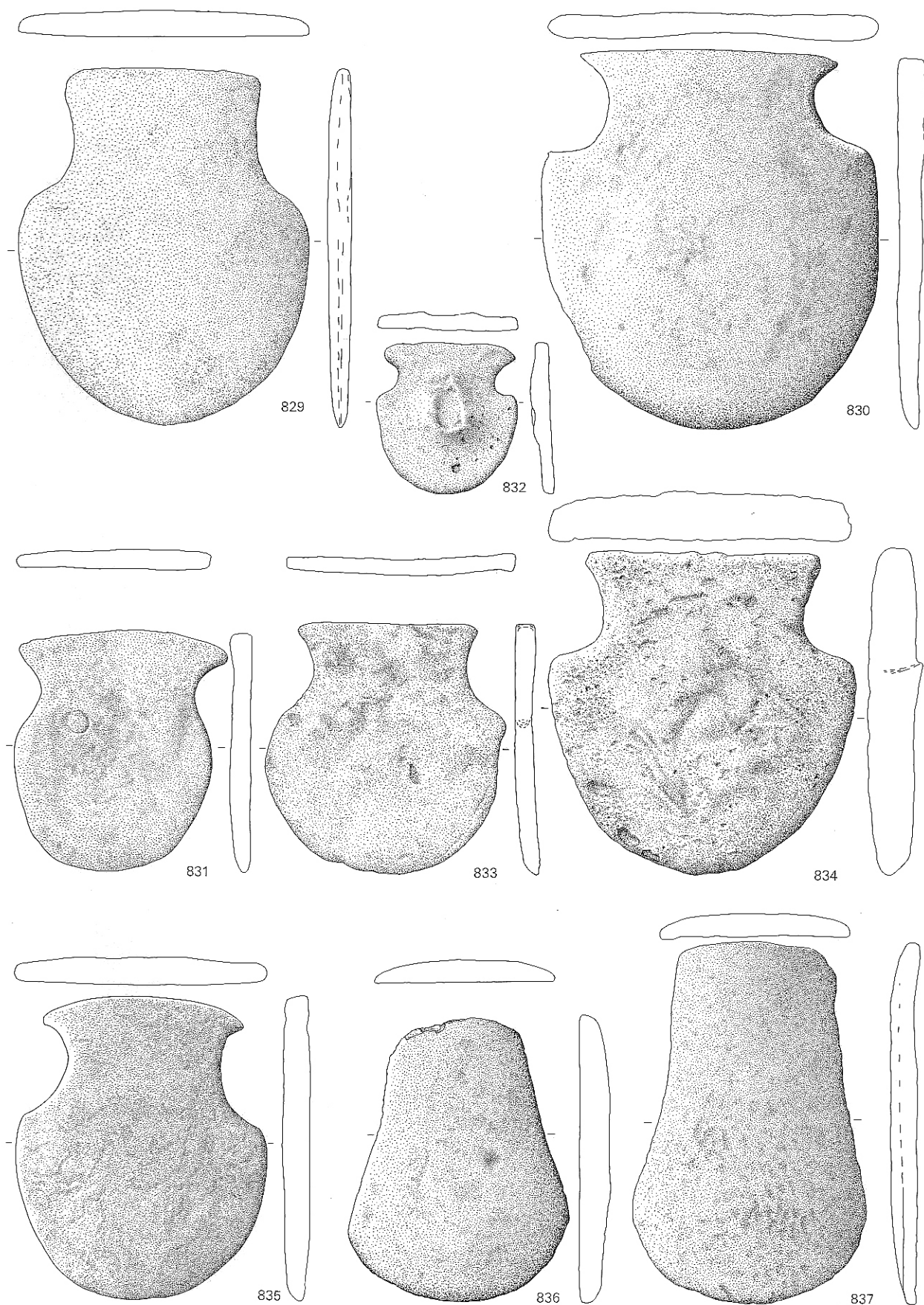
818-823 Chota Nagpur.

Scale 1 : 3



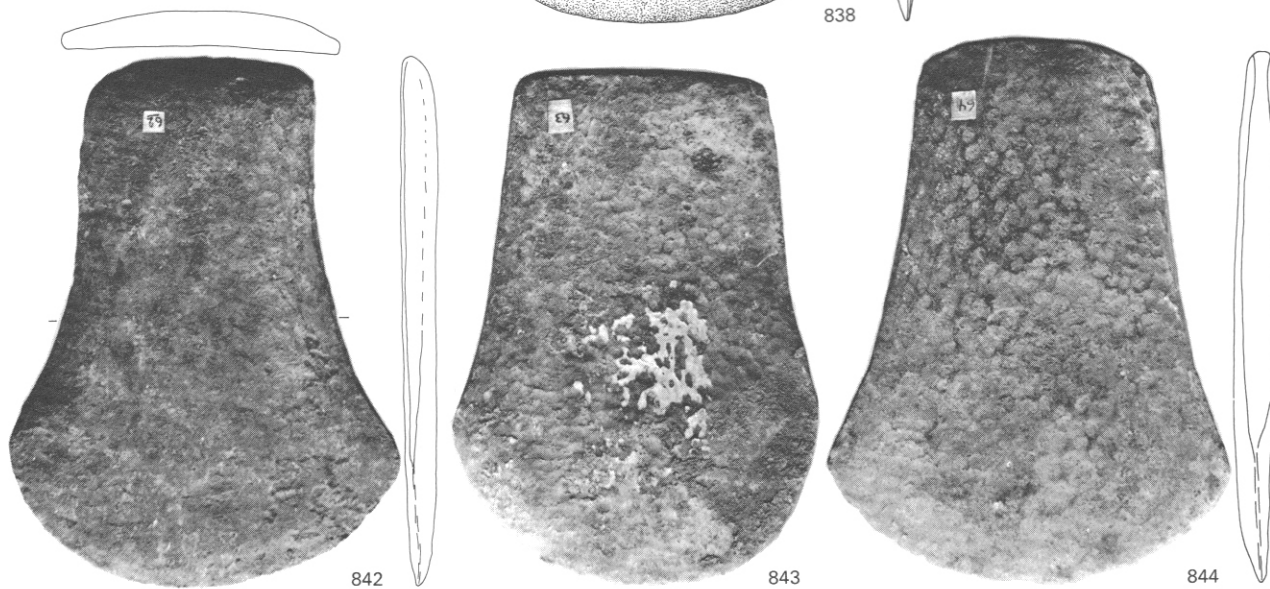
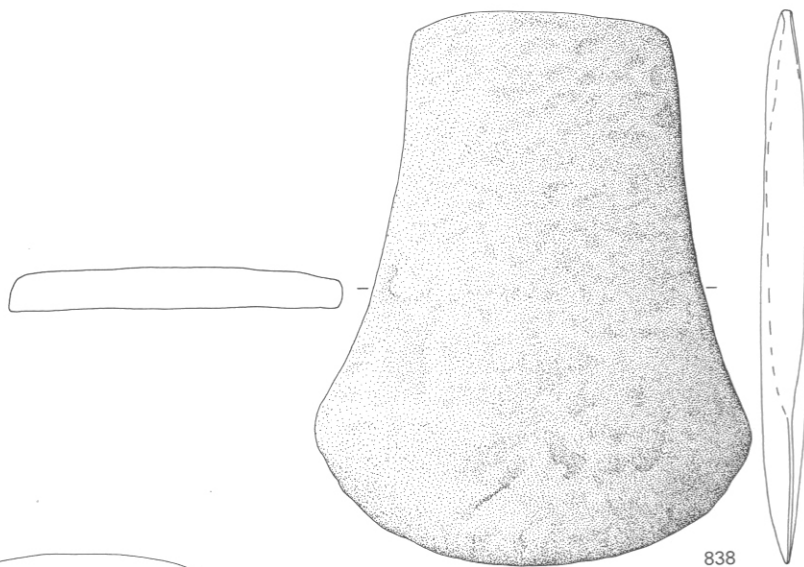
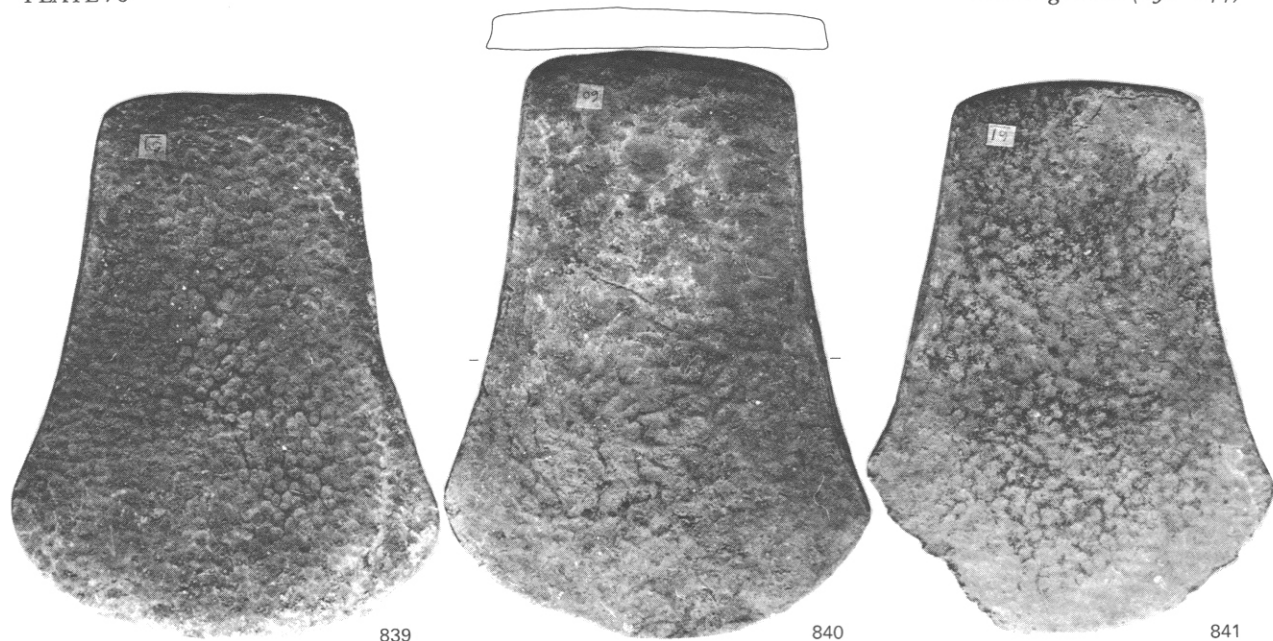
824.825 Dist. Manbhum; 826 Dist. Mayurbanj; 827 Gola; 828 P.S. Bassia.

Scale 1 : 3



829, 831 Chota Nagpur; 830 Chatla; 832-834 Dist. Manbhum; 835 Kushaya; 836 Bartola; 837 Biru.

Scale 1 : 3



838-844 Chota Nagpur.

Scale 1 : 3

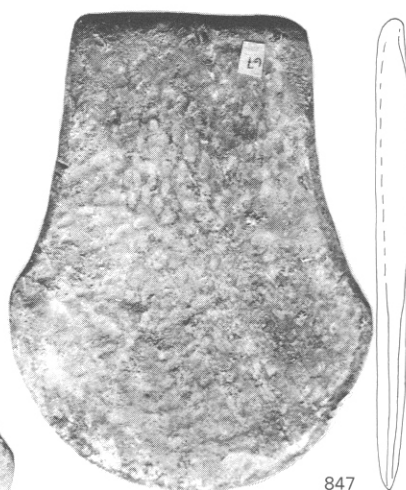




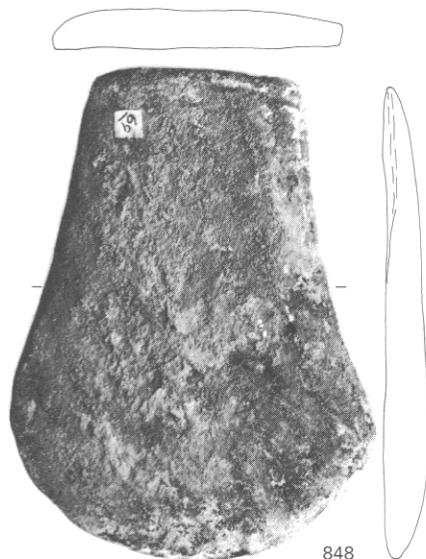
845



846



847



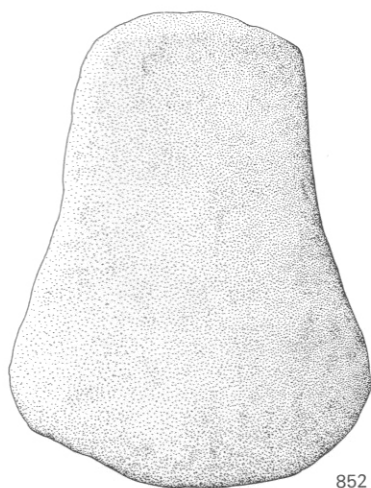
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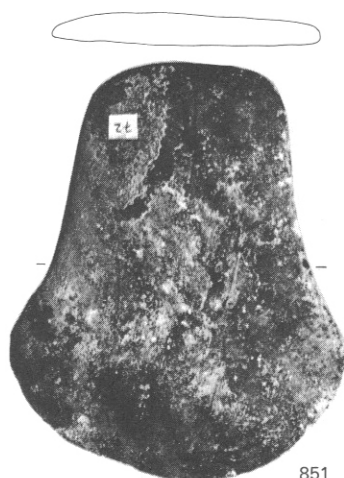
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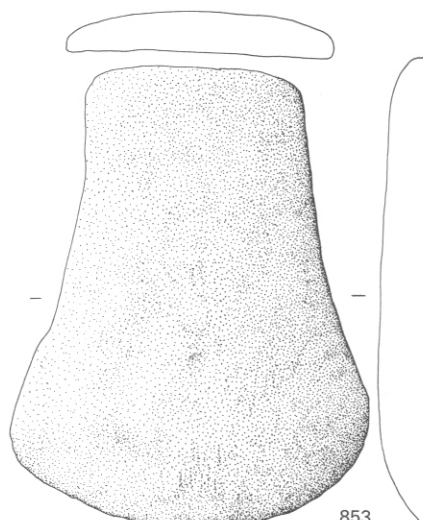
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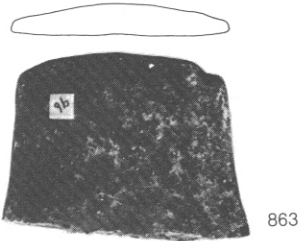
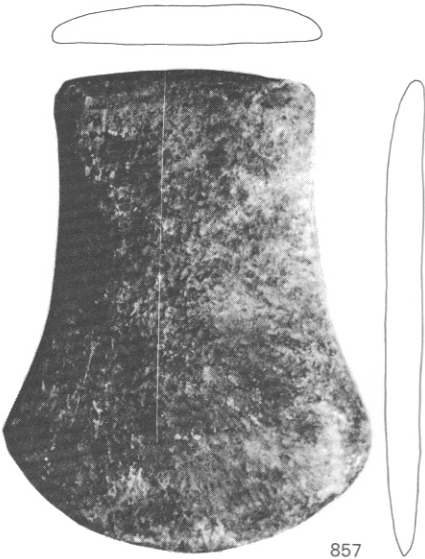
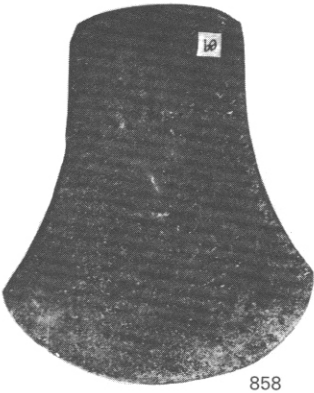
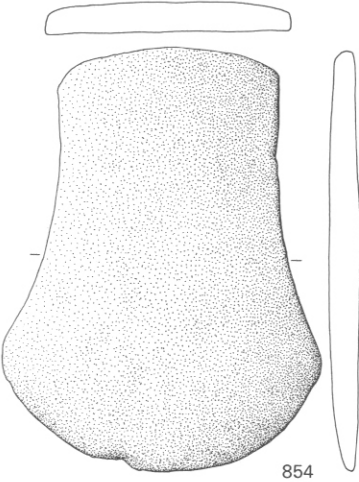
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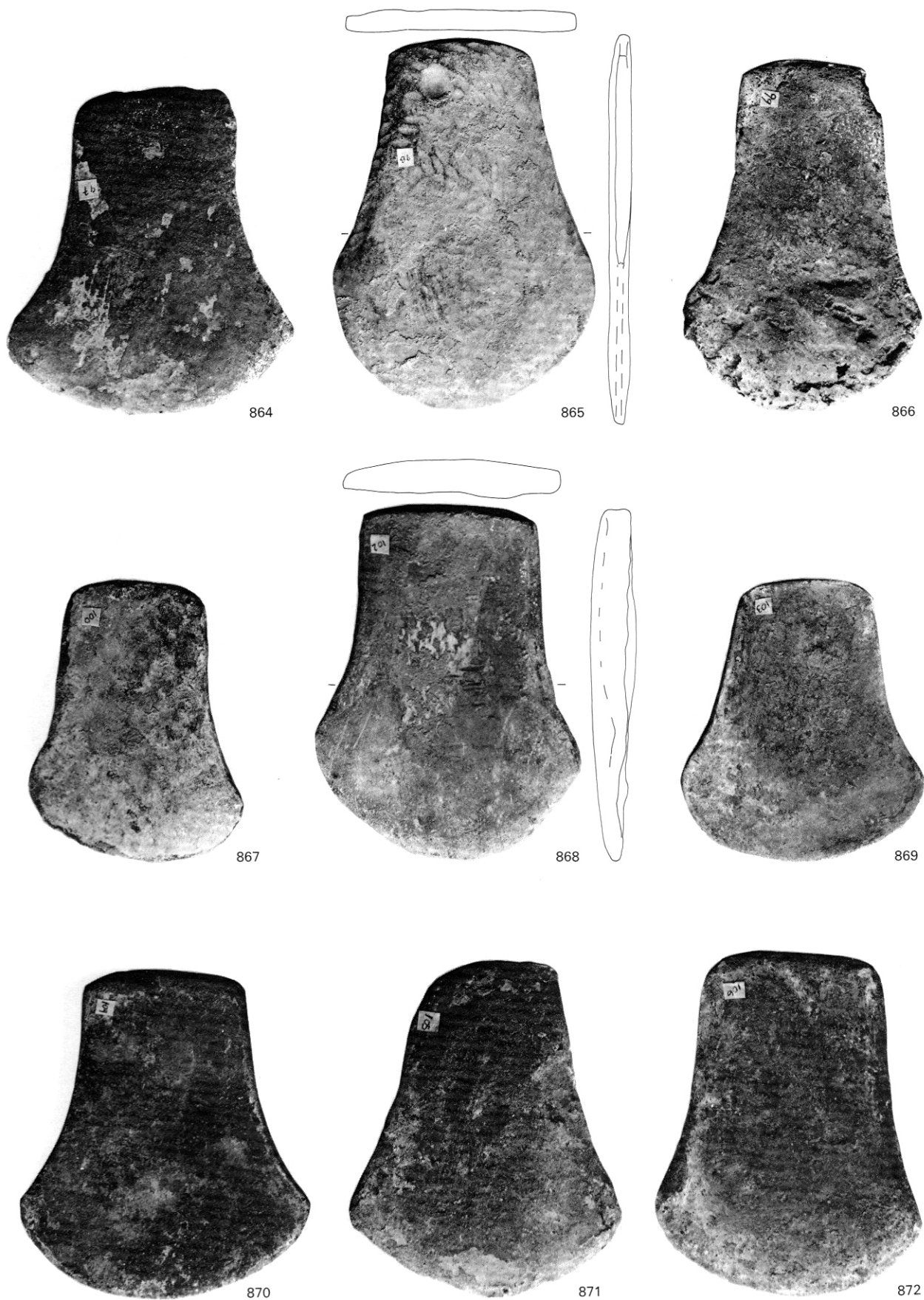
851



853



854-863 Chota Nagpur.  
Scale 1 : 3



864-872 Chota Nagpur.

Scale 1 : 3





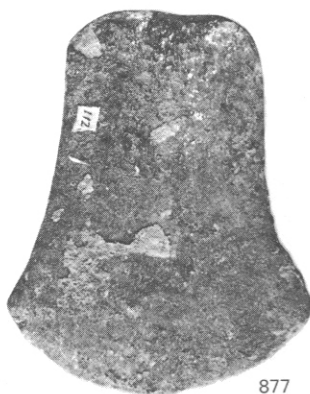
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874



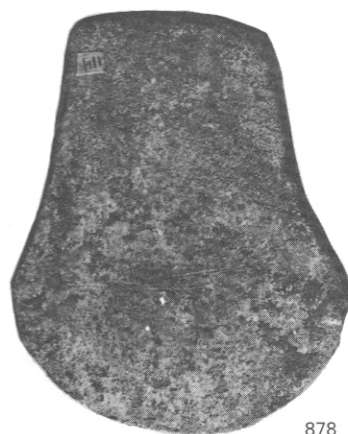
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882

873-882 Chota Nagpur.

Scale 1 : 3



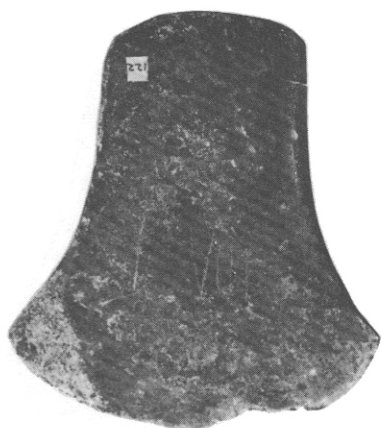
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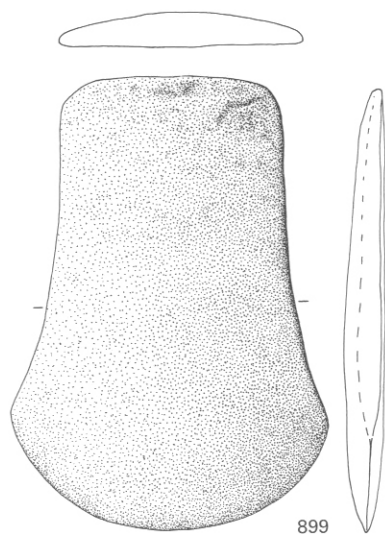
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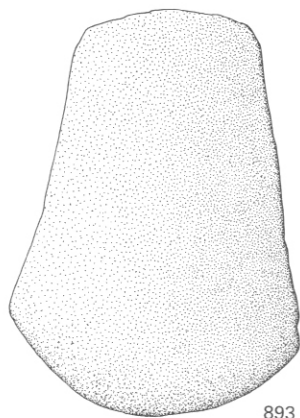
891

883-891 Chota Nagpur.

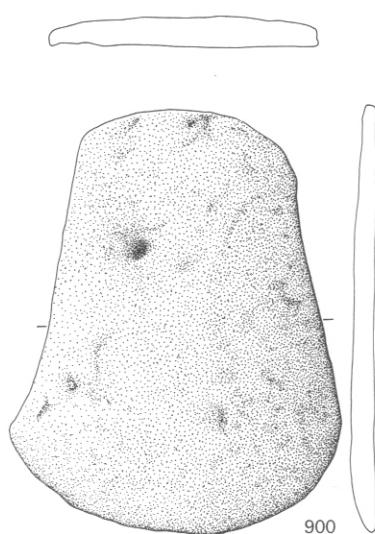
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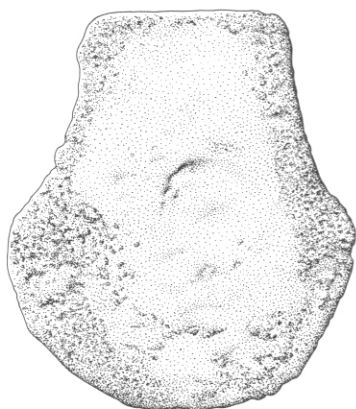
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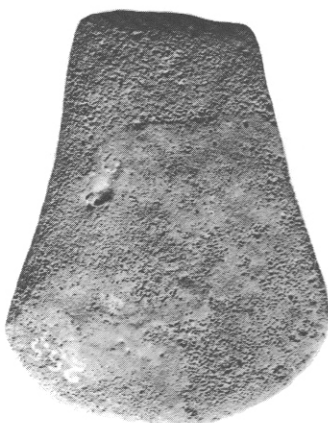
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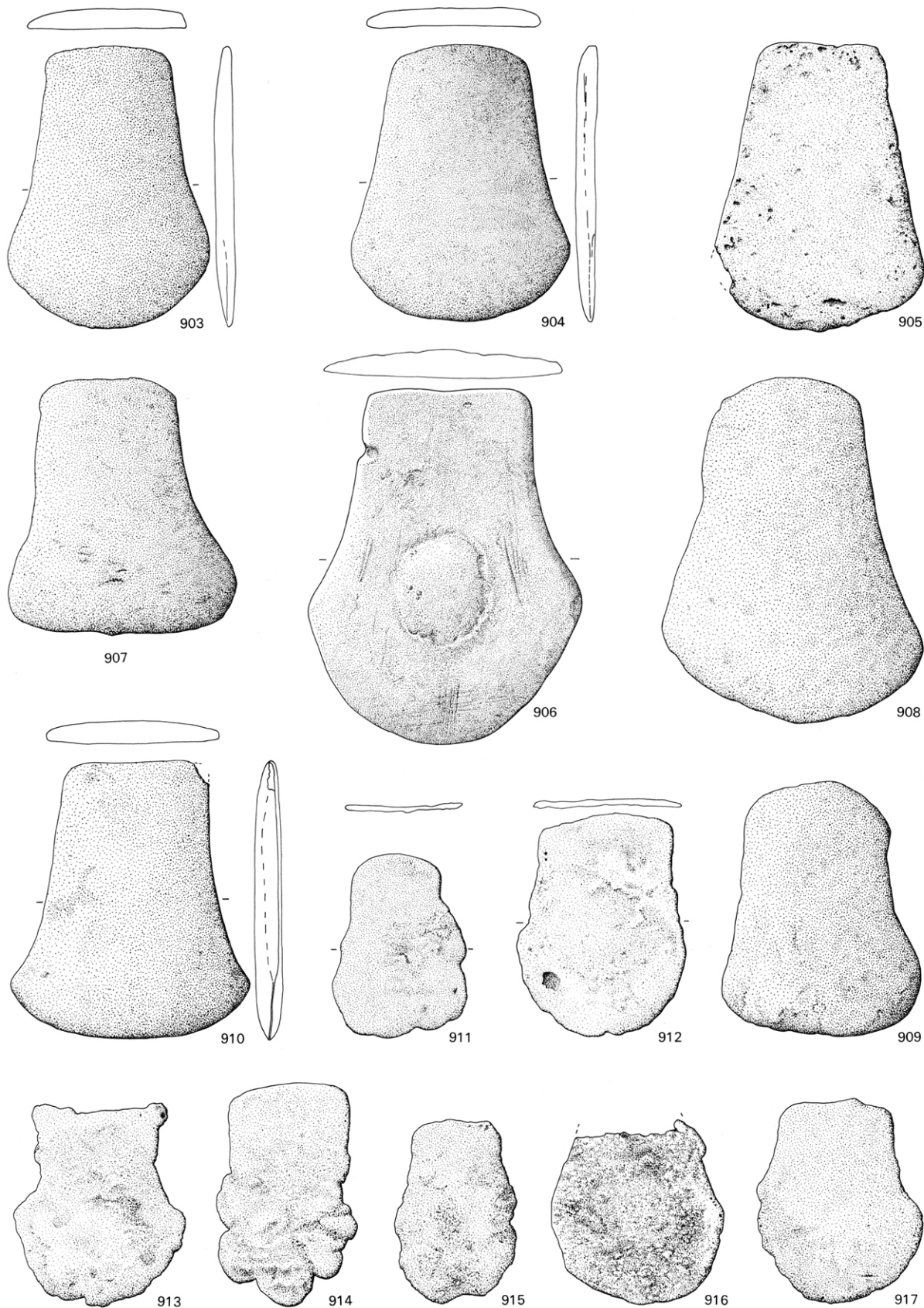
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901

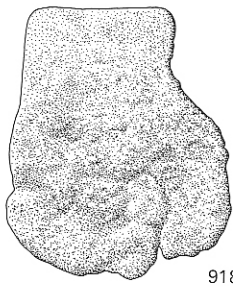
892 Chota Nagpur; 893-898 Dist. Ranchi; 899-901 Kamdara; 902 Kera.

Scale 1 : 3

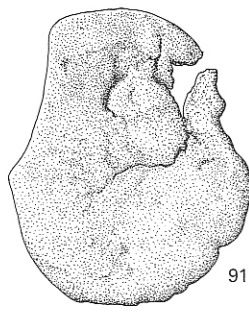


903,904 Mahuadanr; 905-909 P. S. Bassia; 910-917 Chota Nagpur.

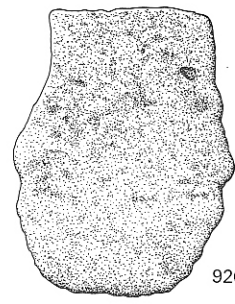
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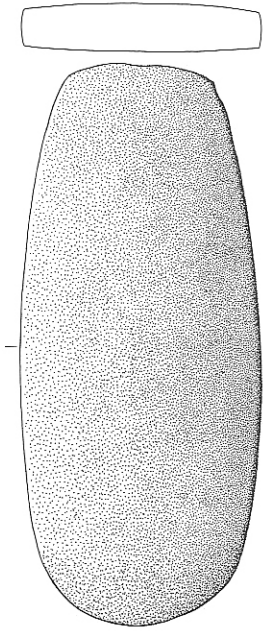
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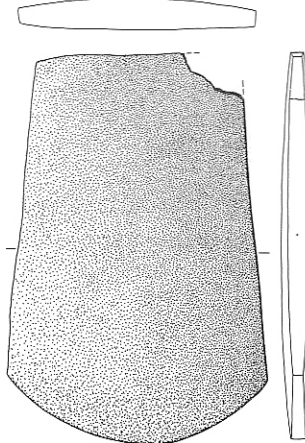
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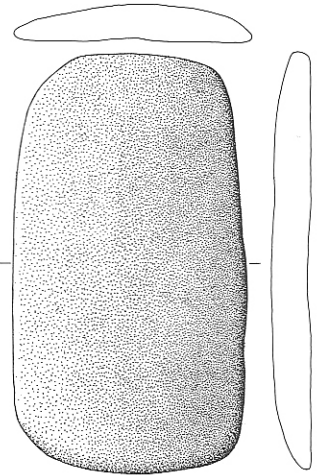
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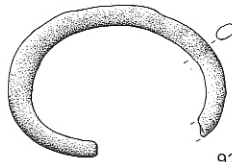
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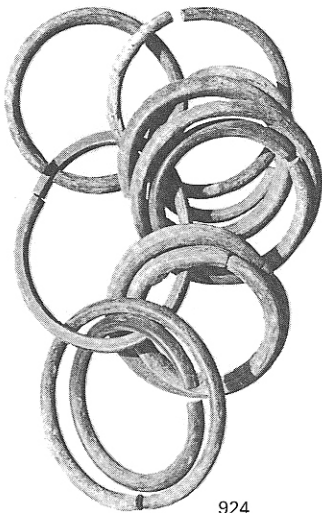
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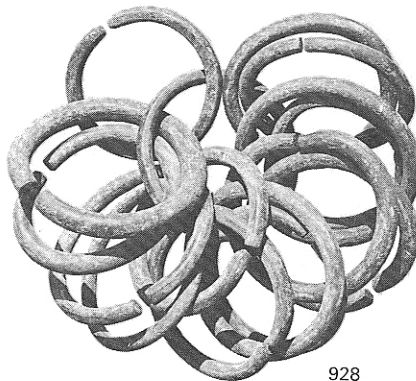
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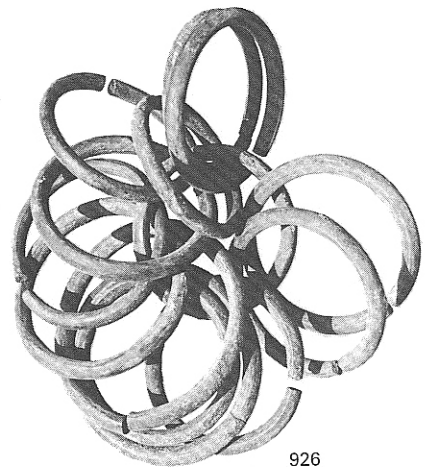
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924



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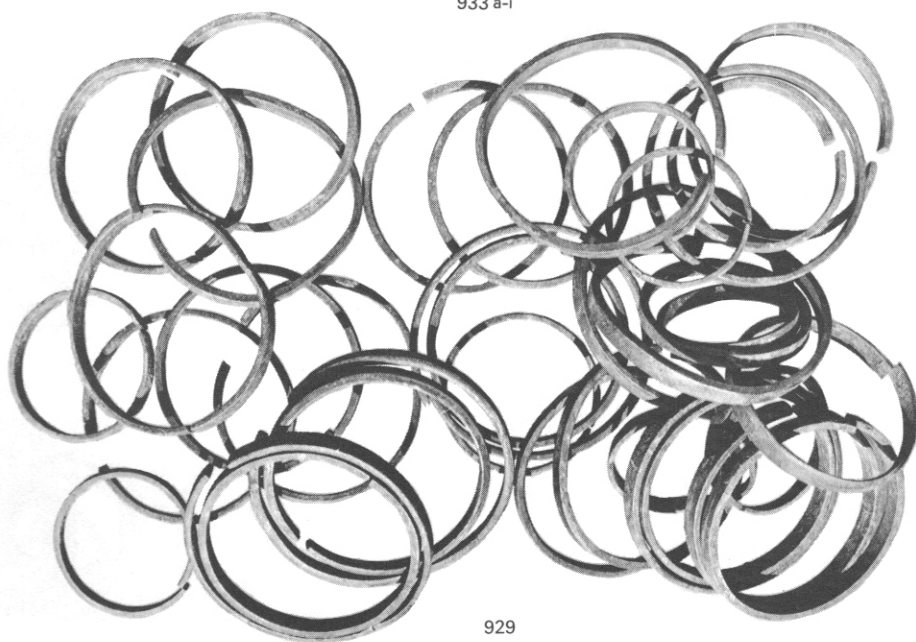
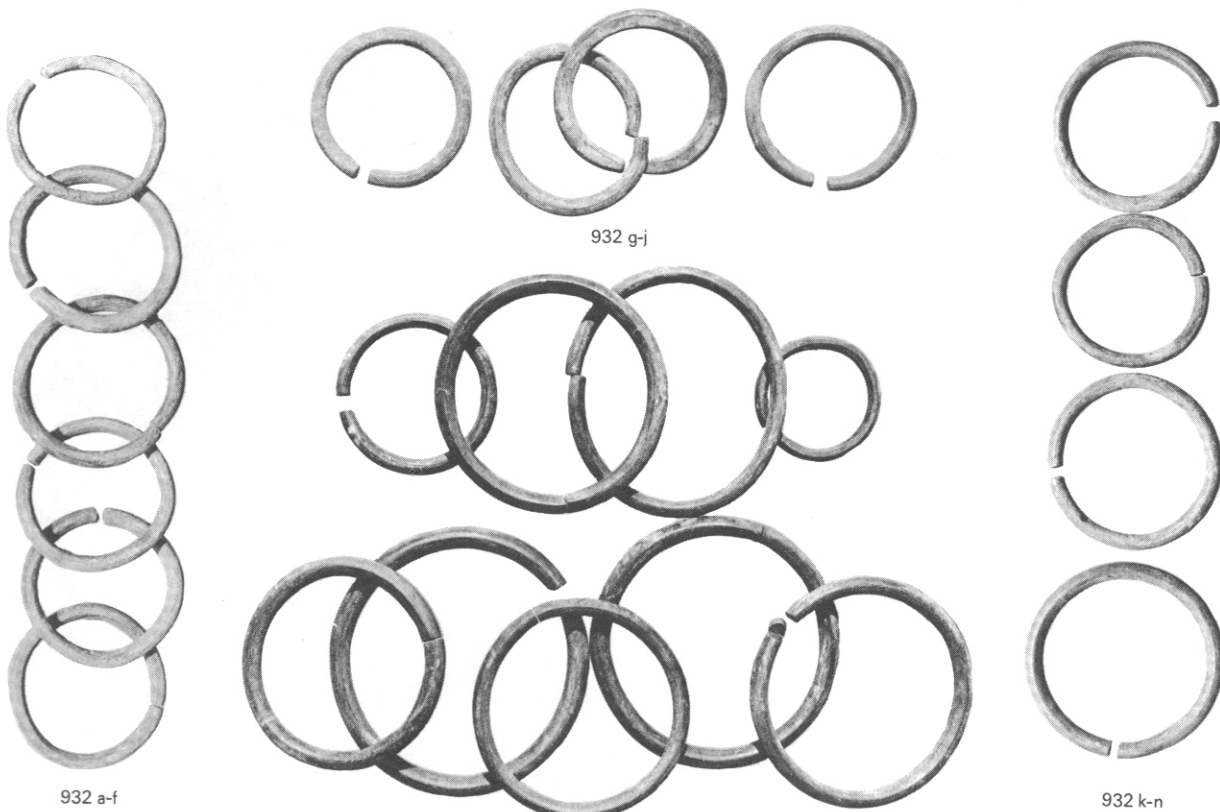
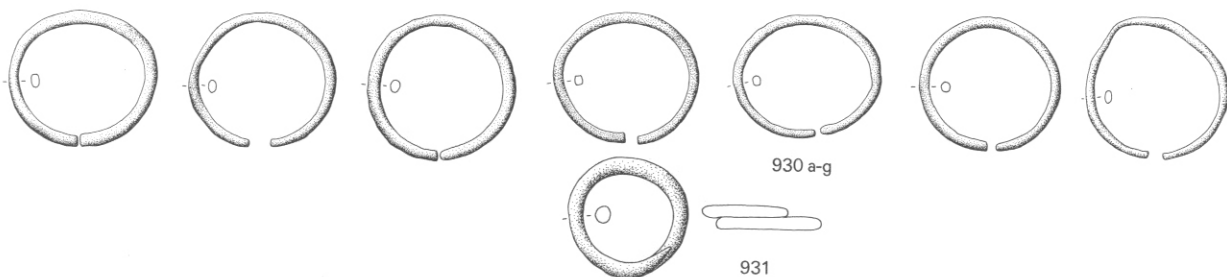


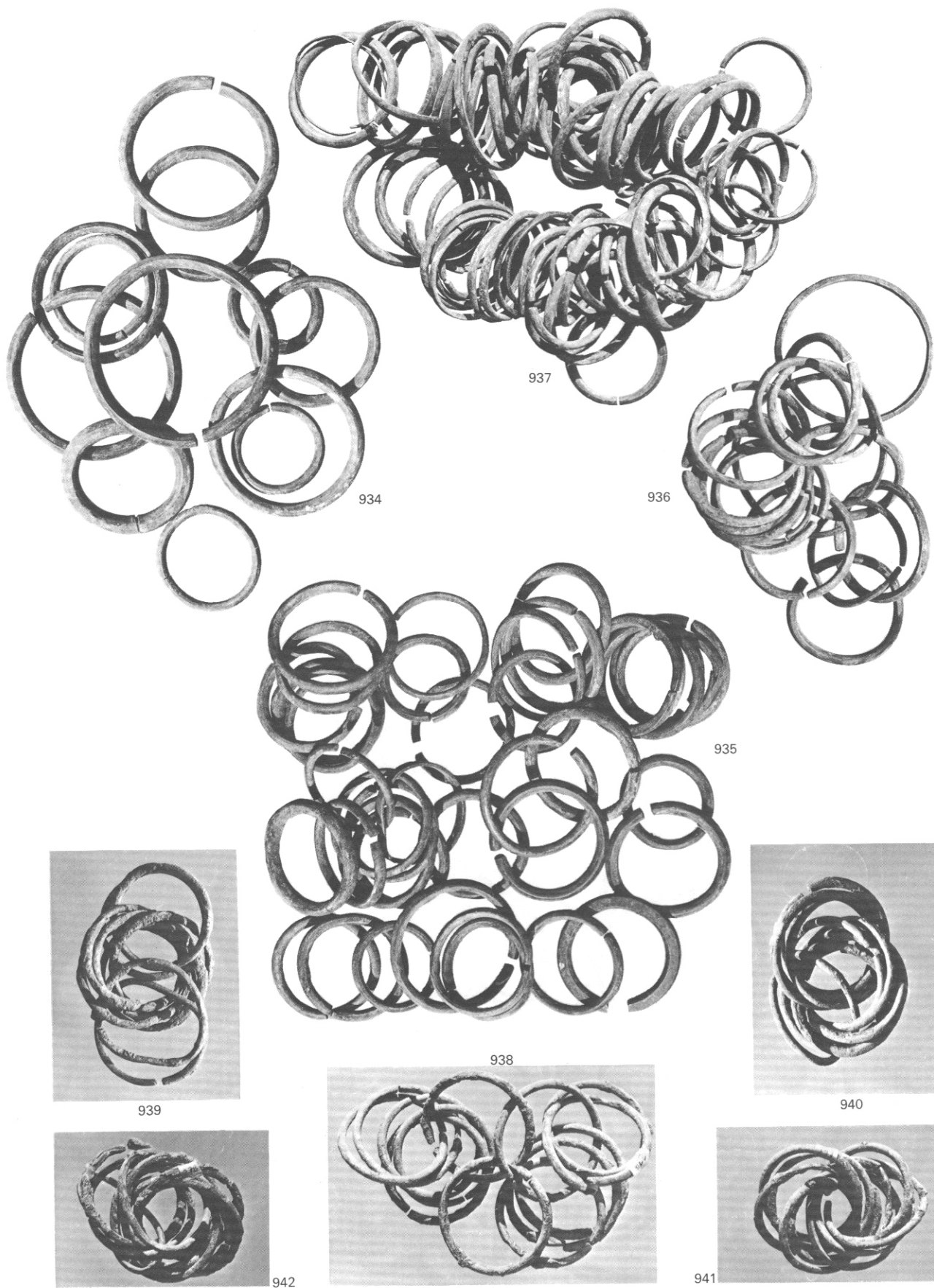
926

918-920 Chota Nagpur; 921 Hansi; 922 Kamalpur; 923, 924, 926-928 Rewari; 925 Mitathal.

Scale 1 : 3

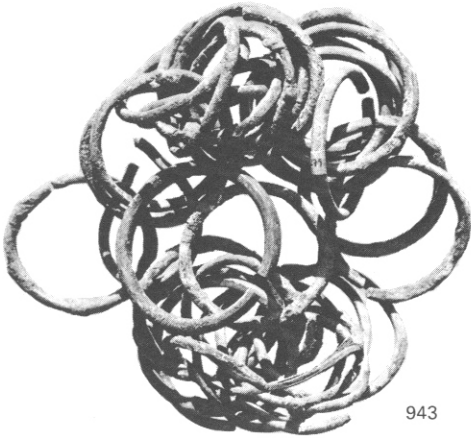




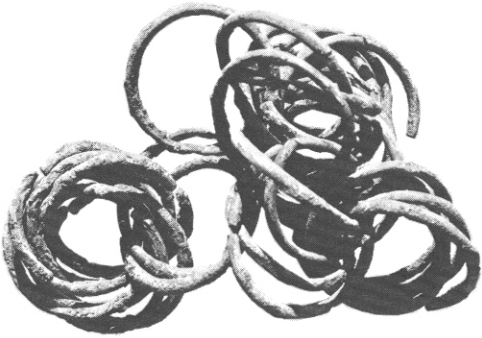


934-942 Rewari.  
Scale 1 : 3

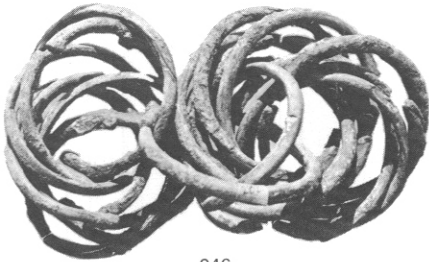




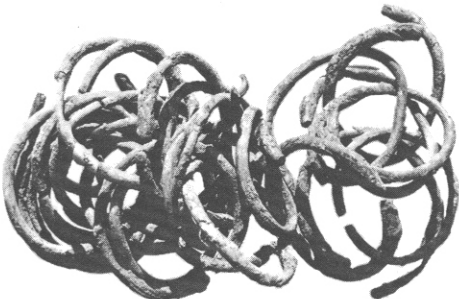
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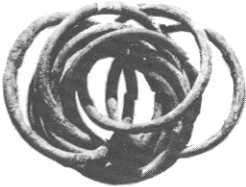
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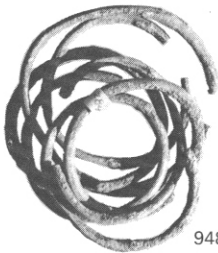
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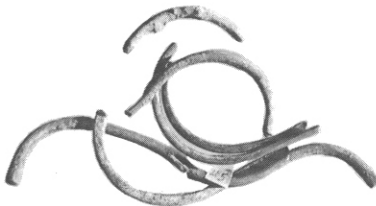
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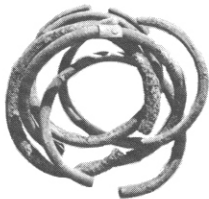
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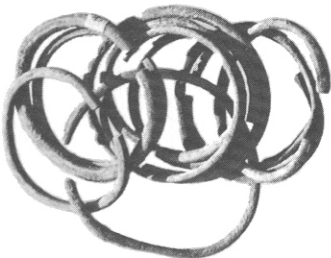
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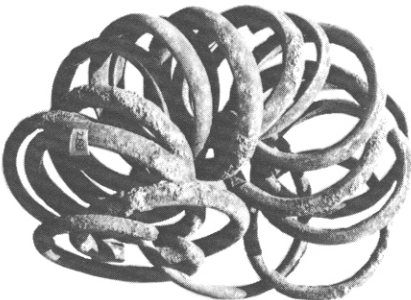
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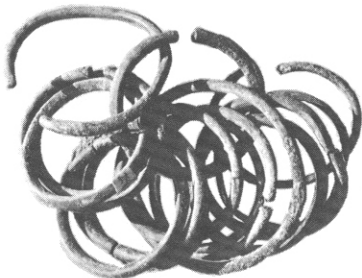
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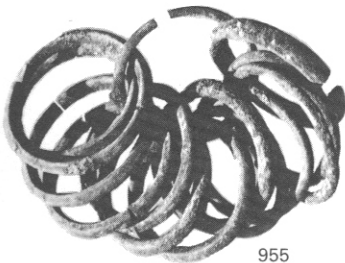
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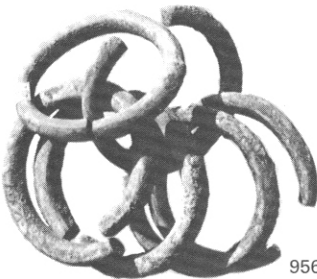
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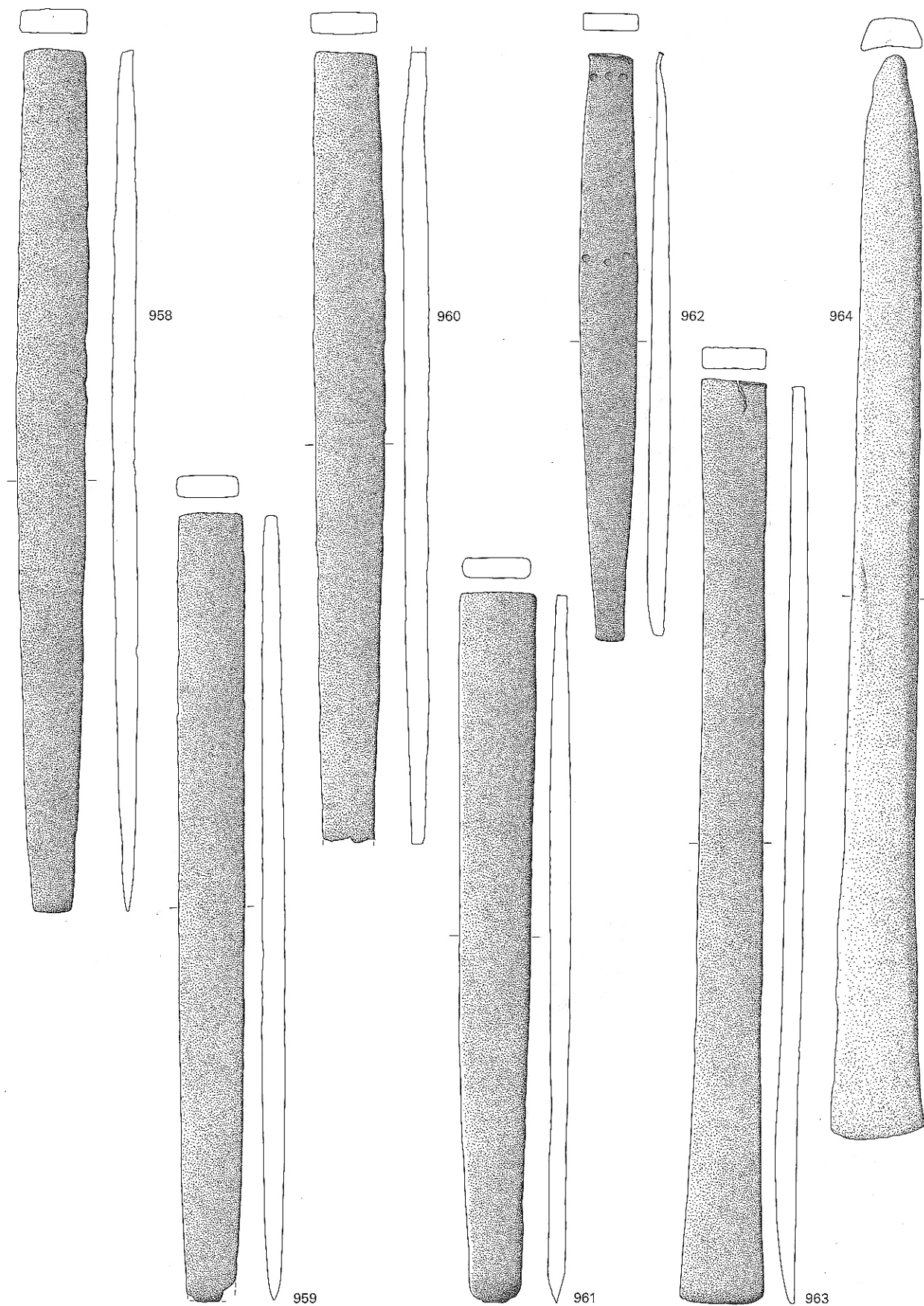
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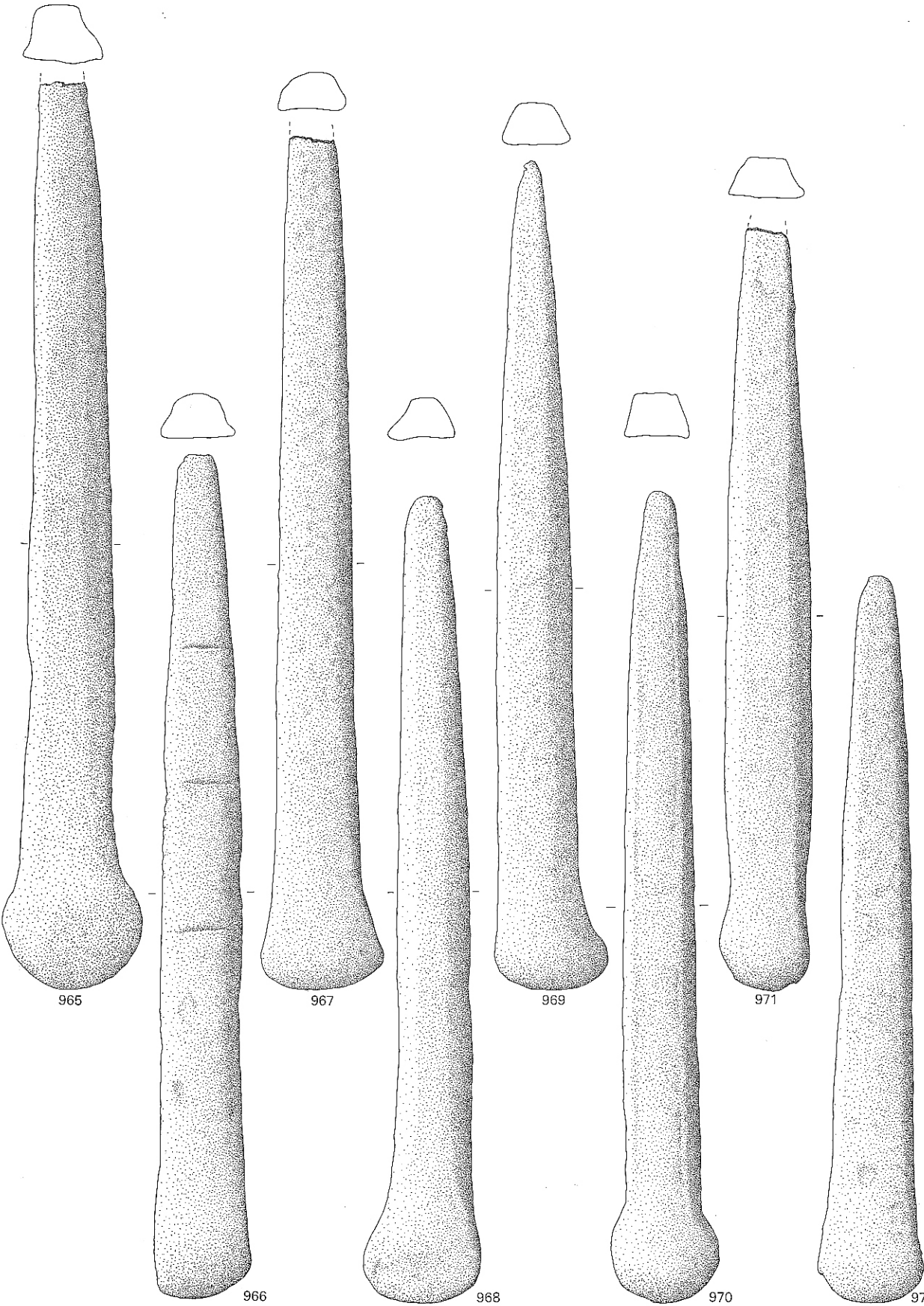


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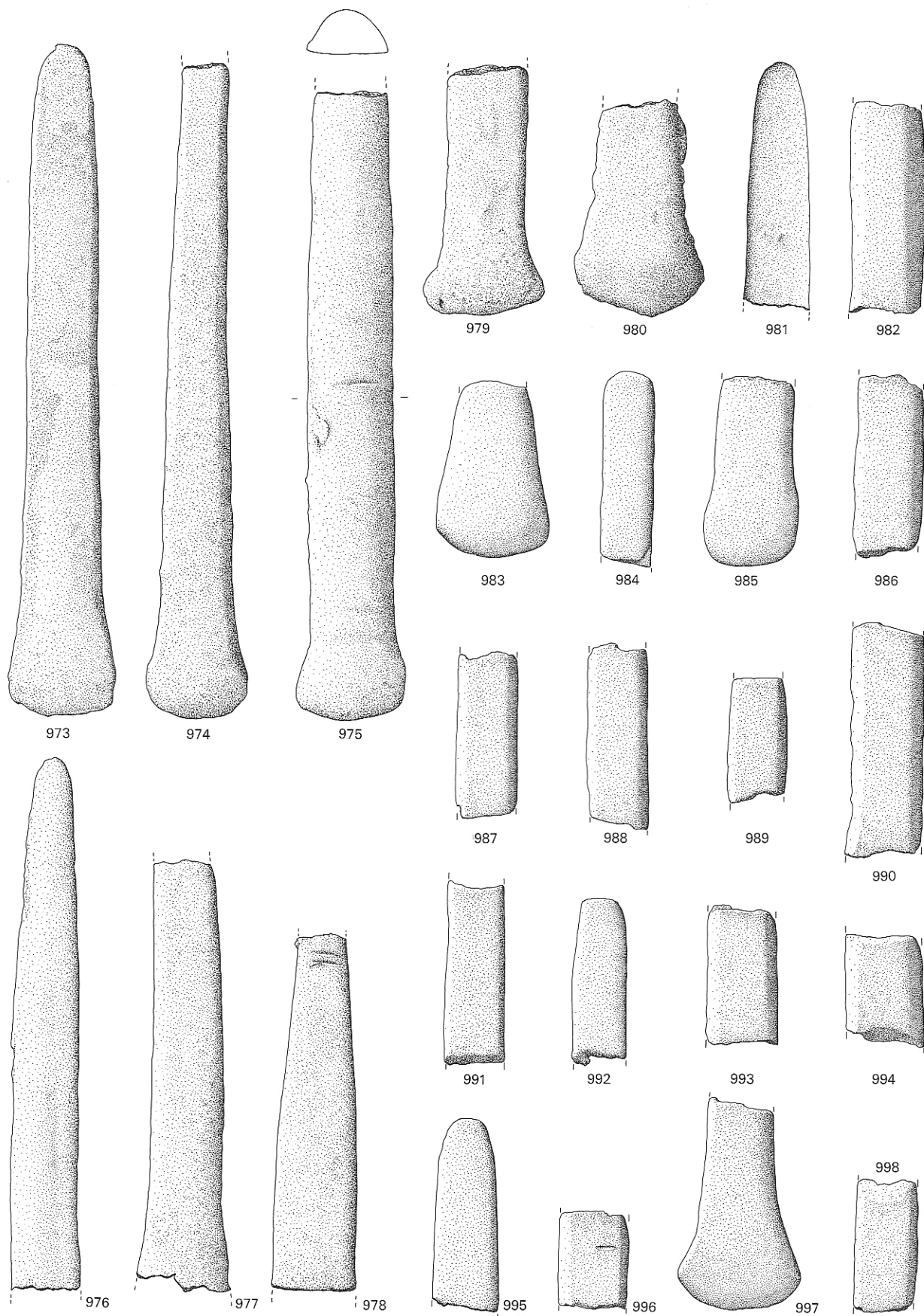


958-961 Hansi; 962 Rewari; 963 Hami; 964 Chota Nagpur.

Scale 1 : 3

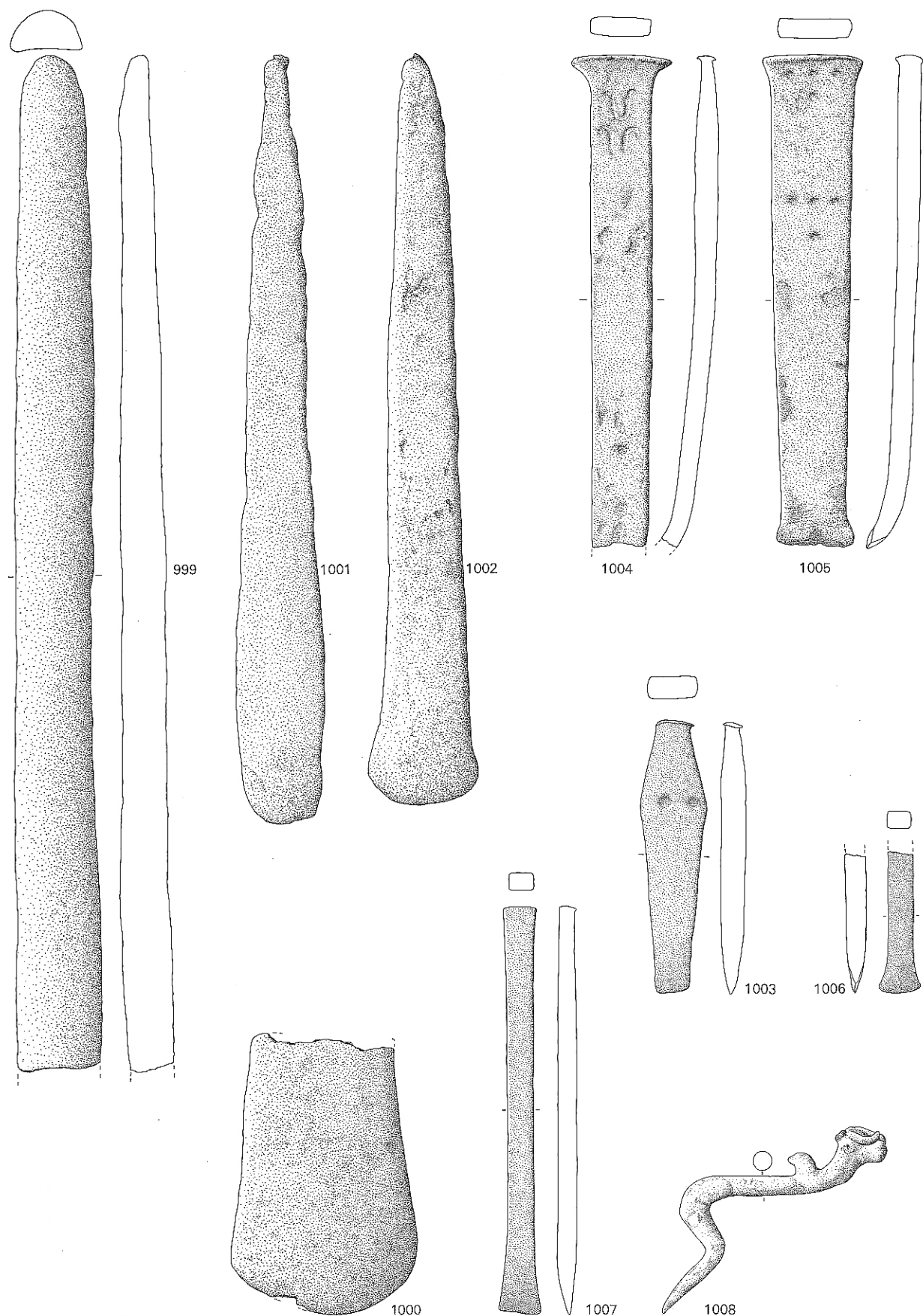


965-972 Chota Nagpur.  
Scale 1 : 3



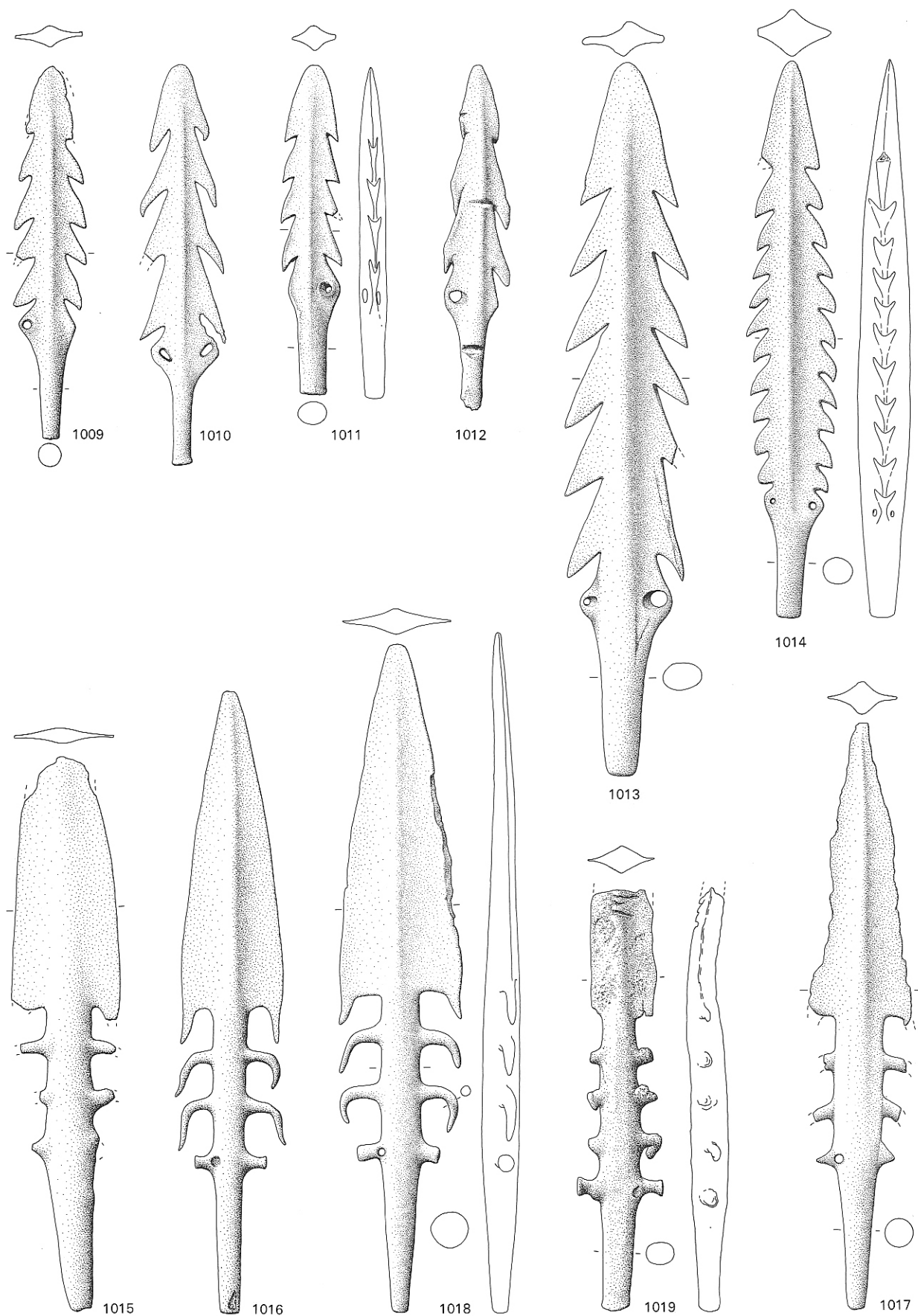
973-998 Chota Nagpur.

Scale 1 : 3



999 Chota Nagpur; 1000 Dist. Ranchi; 1001 Harra Chowra Darh; 1002 Kamdara; 1003 Bithur; 1004-1007 Rewari; 1008 Narangabad.

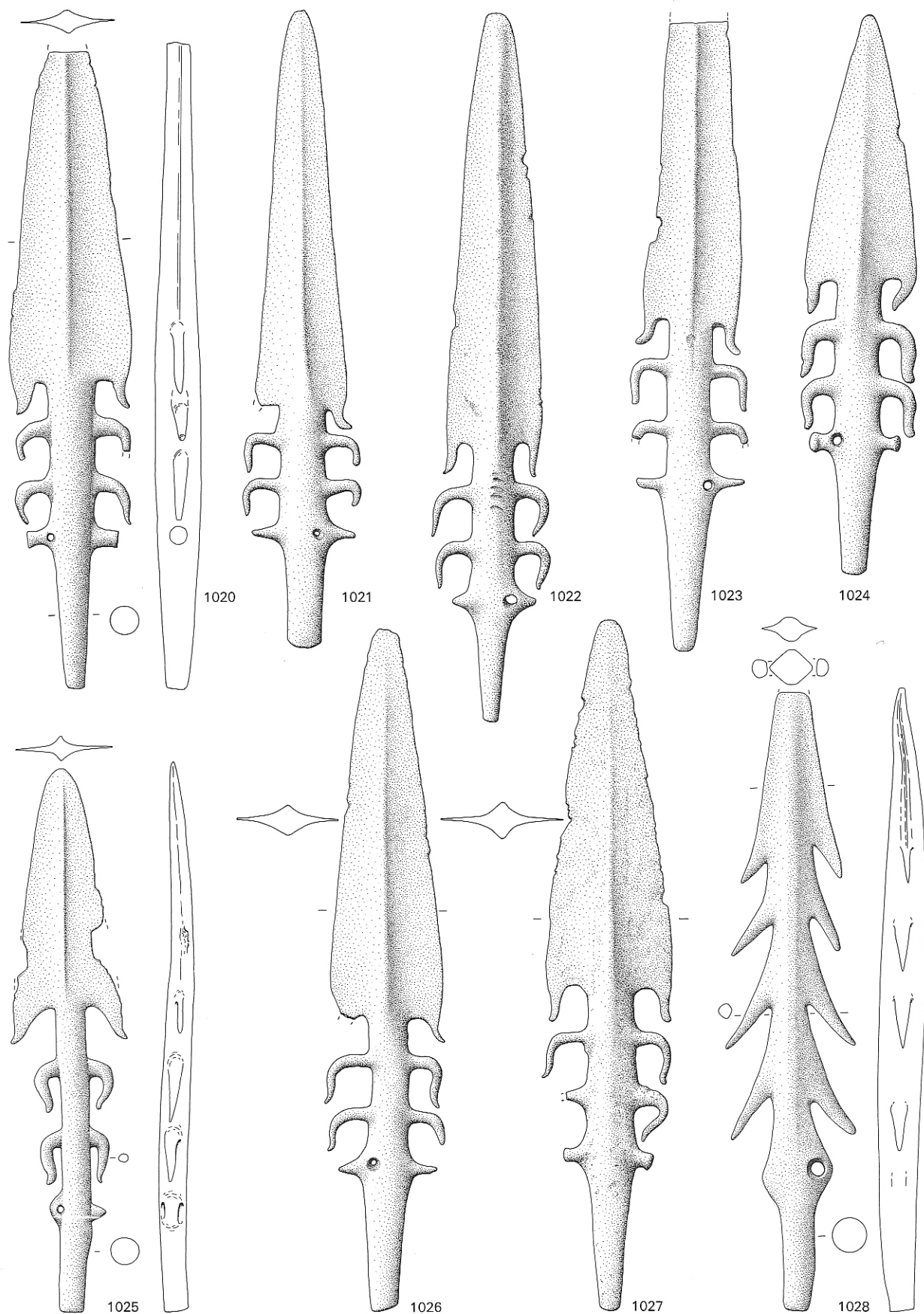
Scale 1 : 3



1009.1010.1015–1018 Bithur; 1011.1013. 1014 Prov. unknown; 1012 Shahabad area; 1019 Mitathal. – (1010.1015 after Smith; 1016 after Shastri).

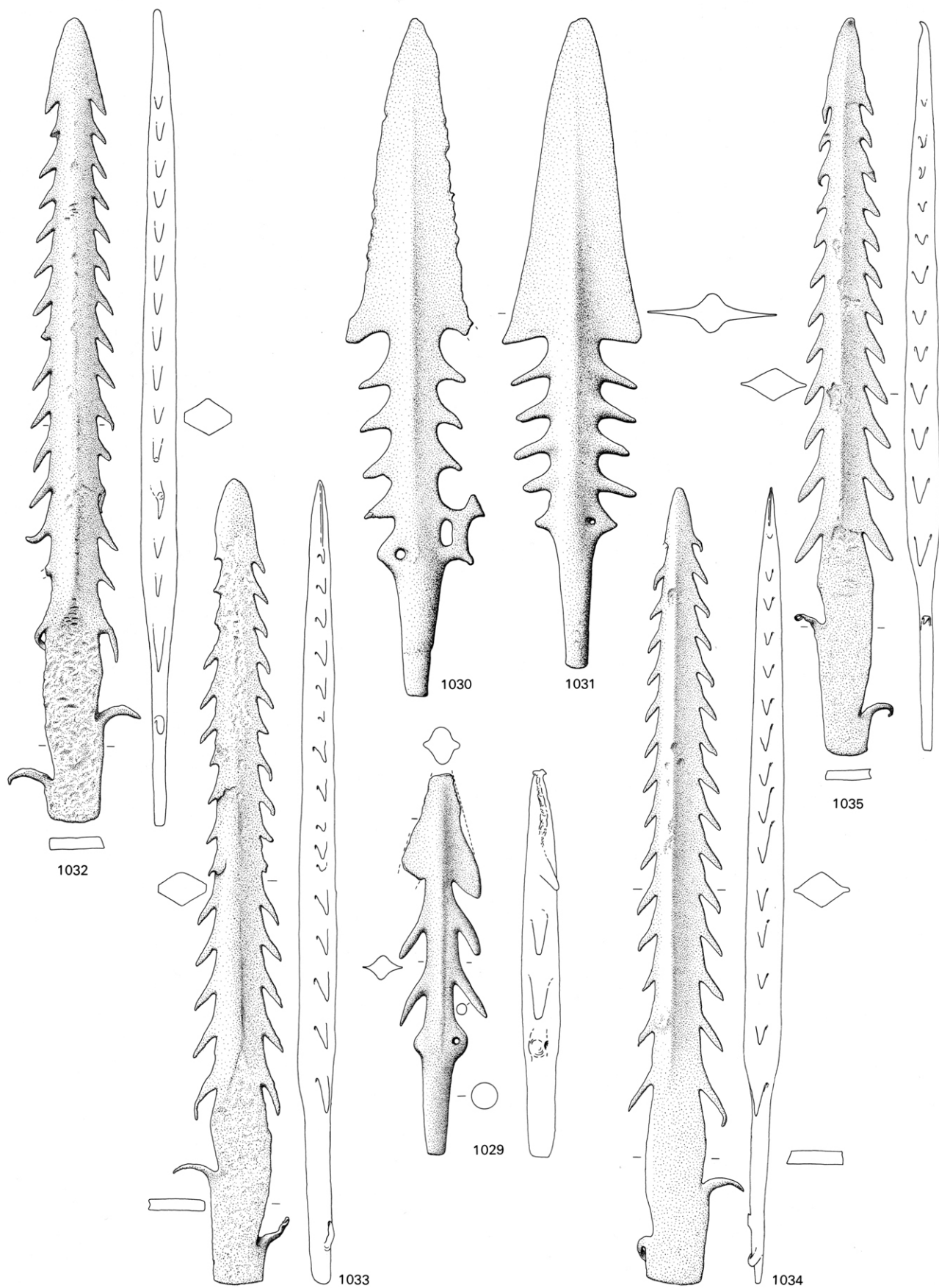
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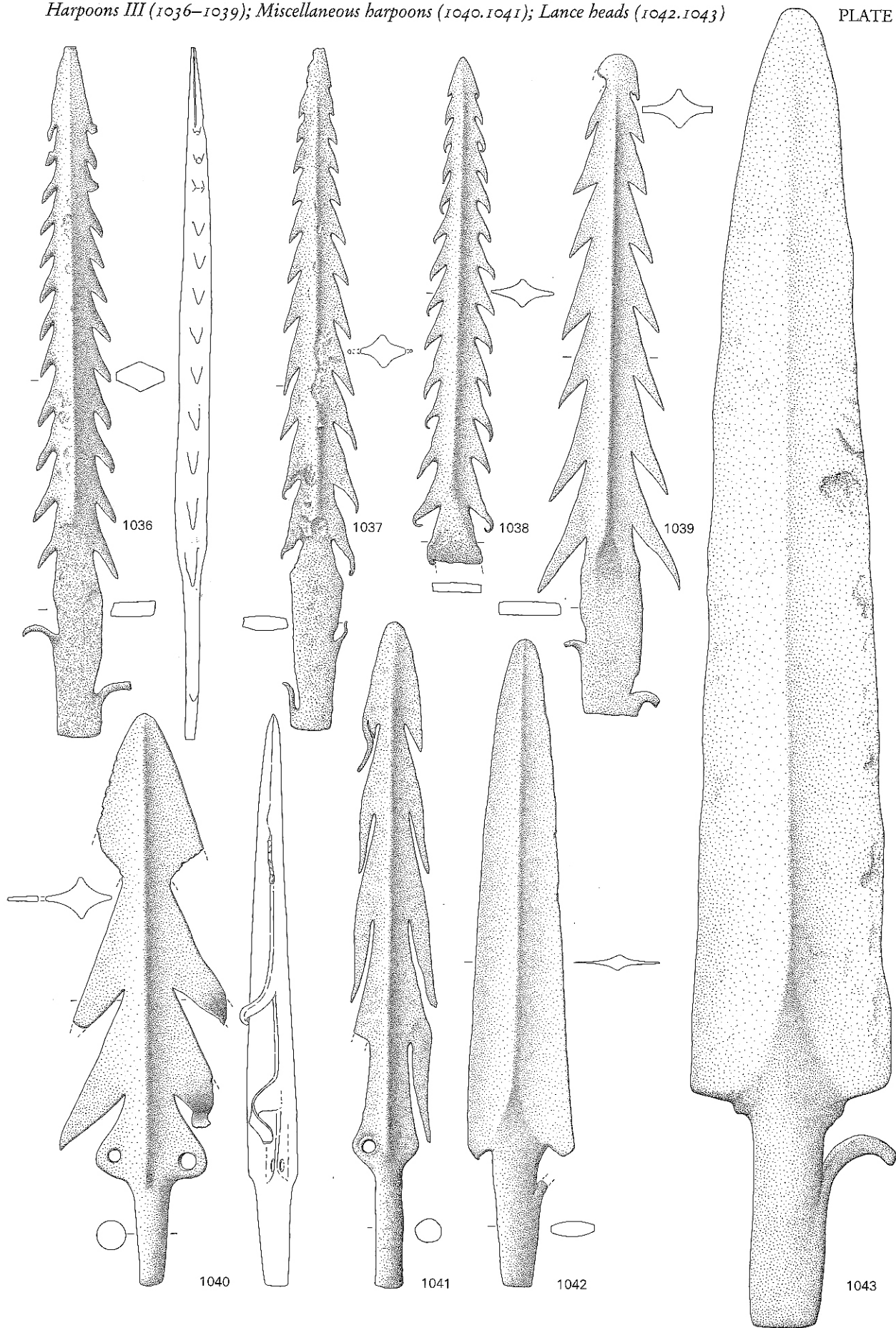
1020-1024 Prov. unknown; 1025.1028 Rewari; 1026.1027 Shahabad area. - (1021 after Gordon; 1022.1023 after a photo; 1024 after Smith).

Scale 1 : 3



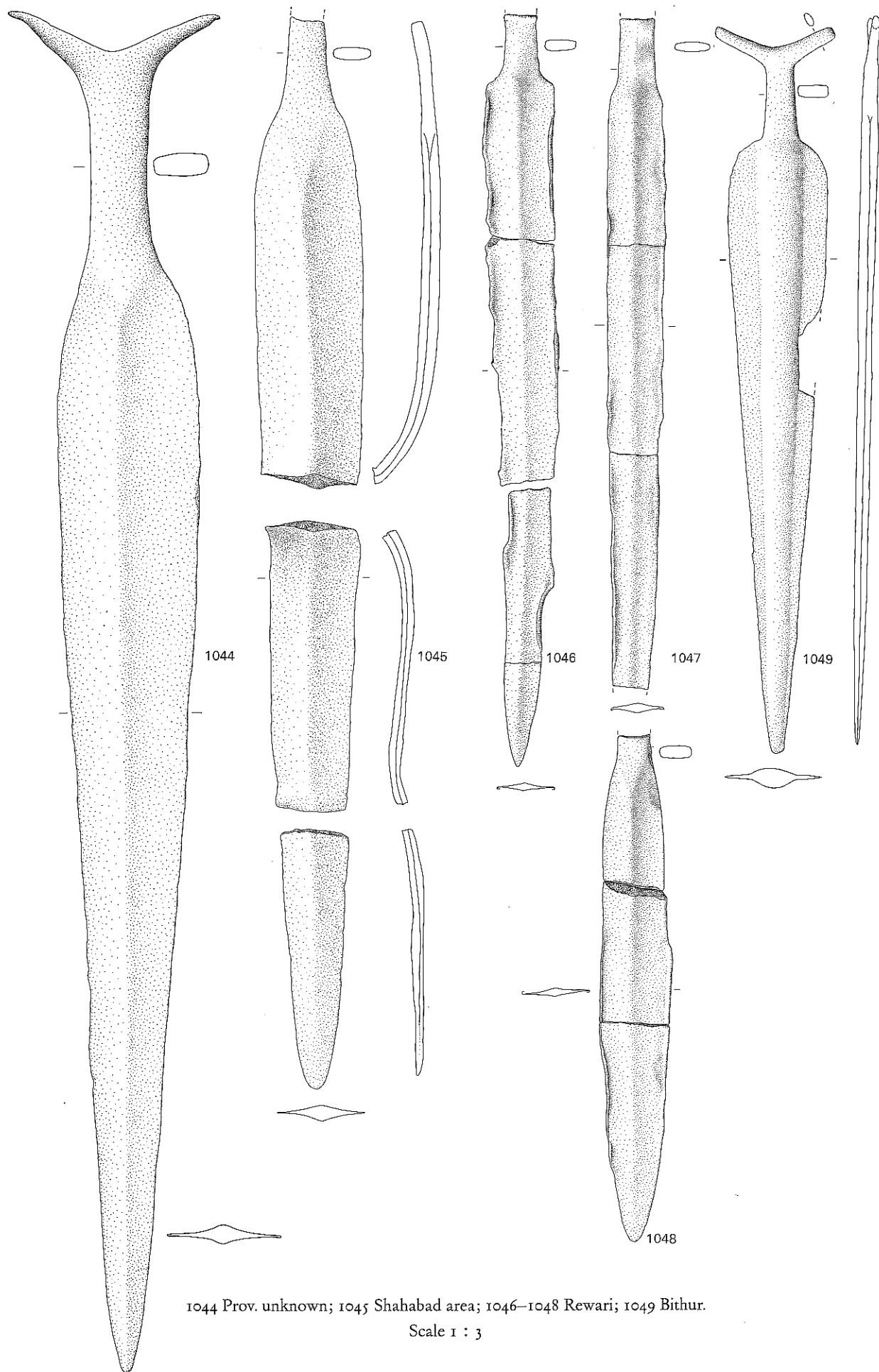
1029 Rewari; 1030 Prov. unknown; 1031 Shahabad area; 1032–1035 Hansi. – (1030 after Smith).

Scale 1 : 3



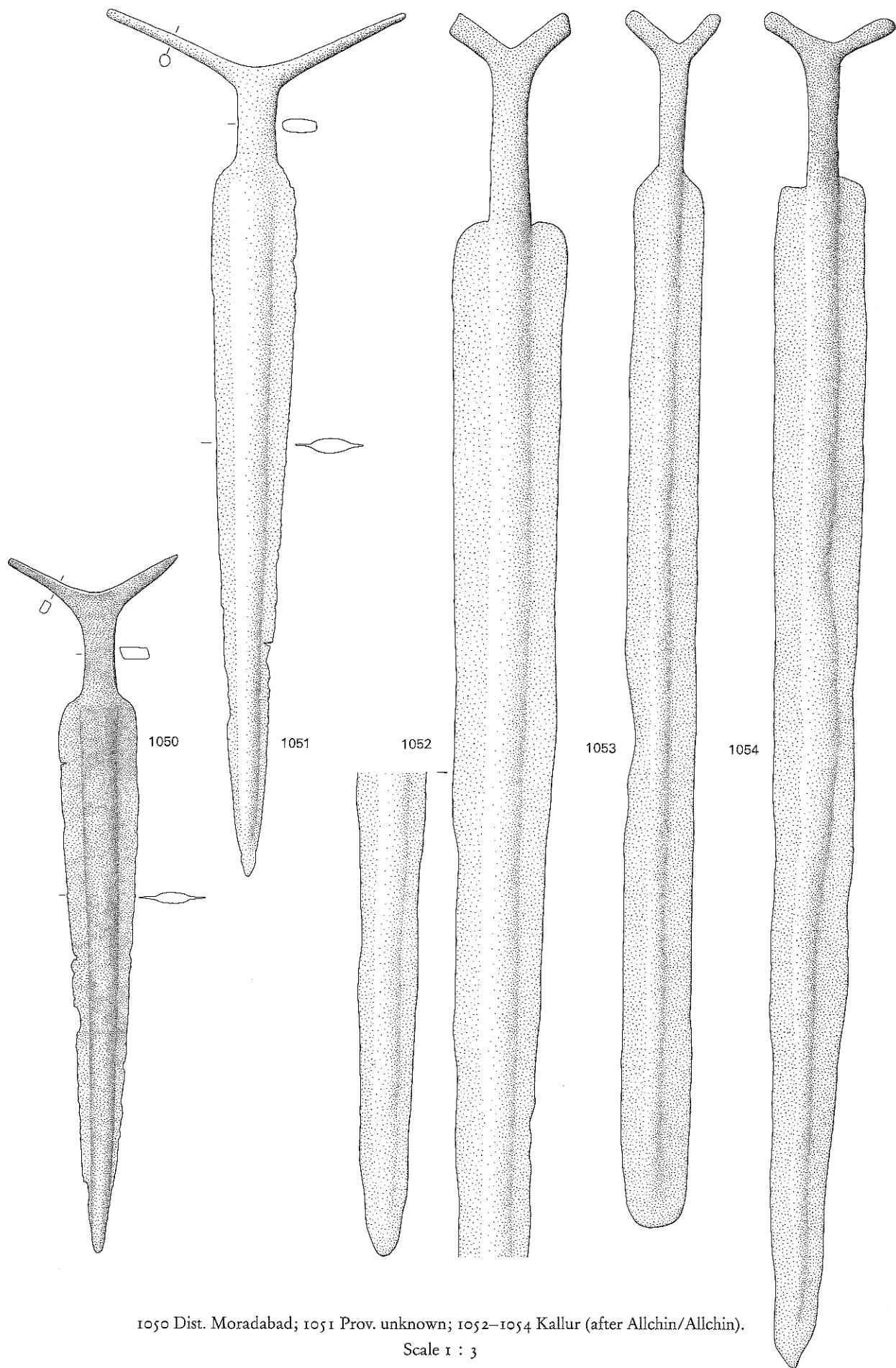
1036-1038 Hansi; 1039 Rewari; 1040 Bendarkala; 1041 Bithur; 1042 Dist. Etawah; 1043 Prov. unknown. - (1041 after Shastri; 1043 after Anon.).

Scale 1 : 3



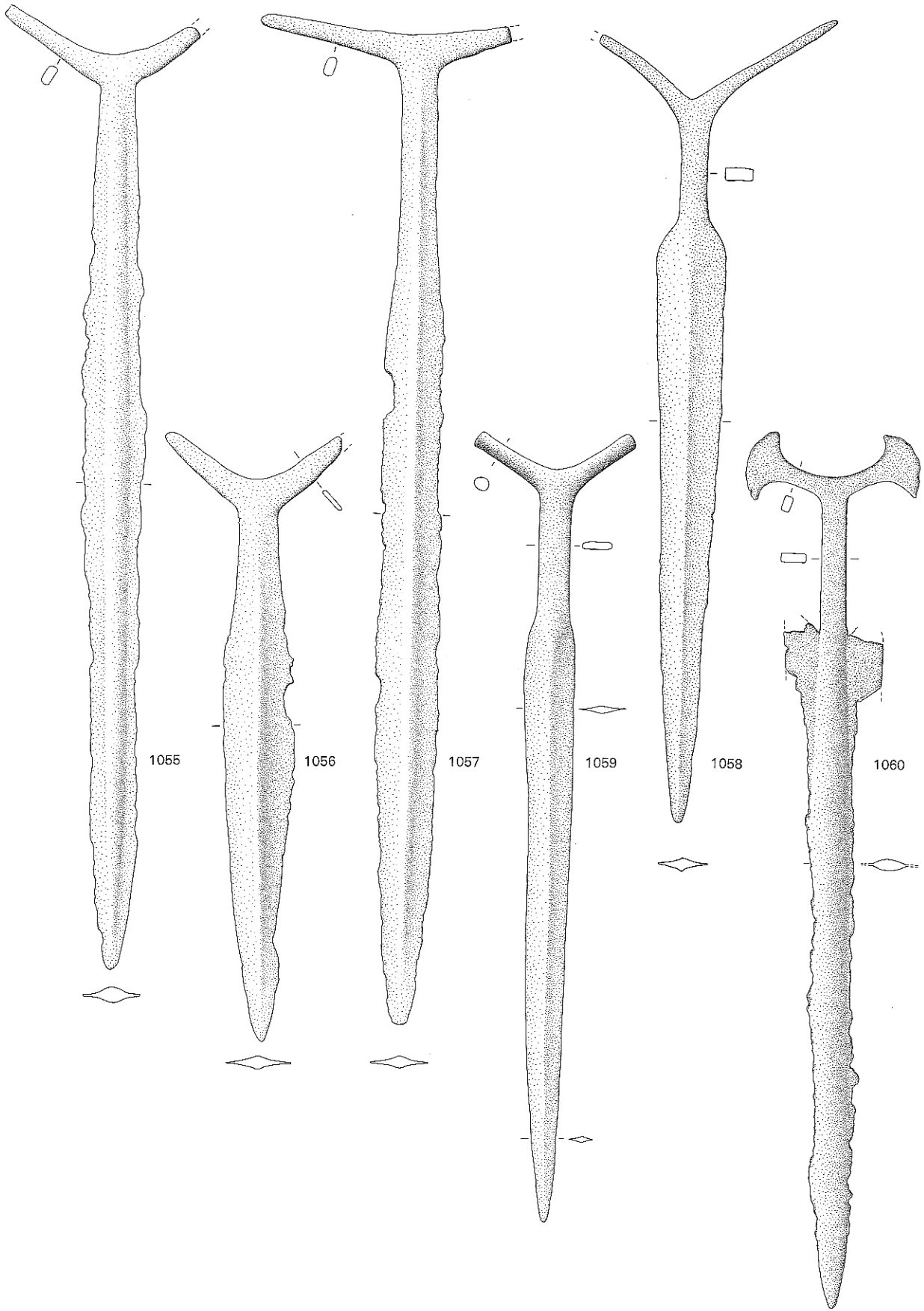
1044 Prov. unknown; 1045 Shahabad area; 1046-1048 Rewari; 1049 Bithur.

Scale 1 : 3



1050 Dist. Moradabad; 1051 Prov. unknown; 1052-1054 Kallur (after Allchin/Allchin).

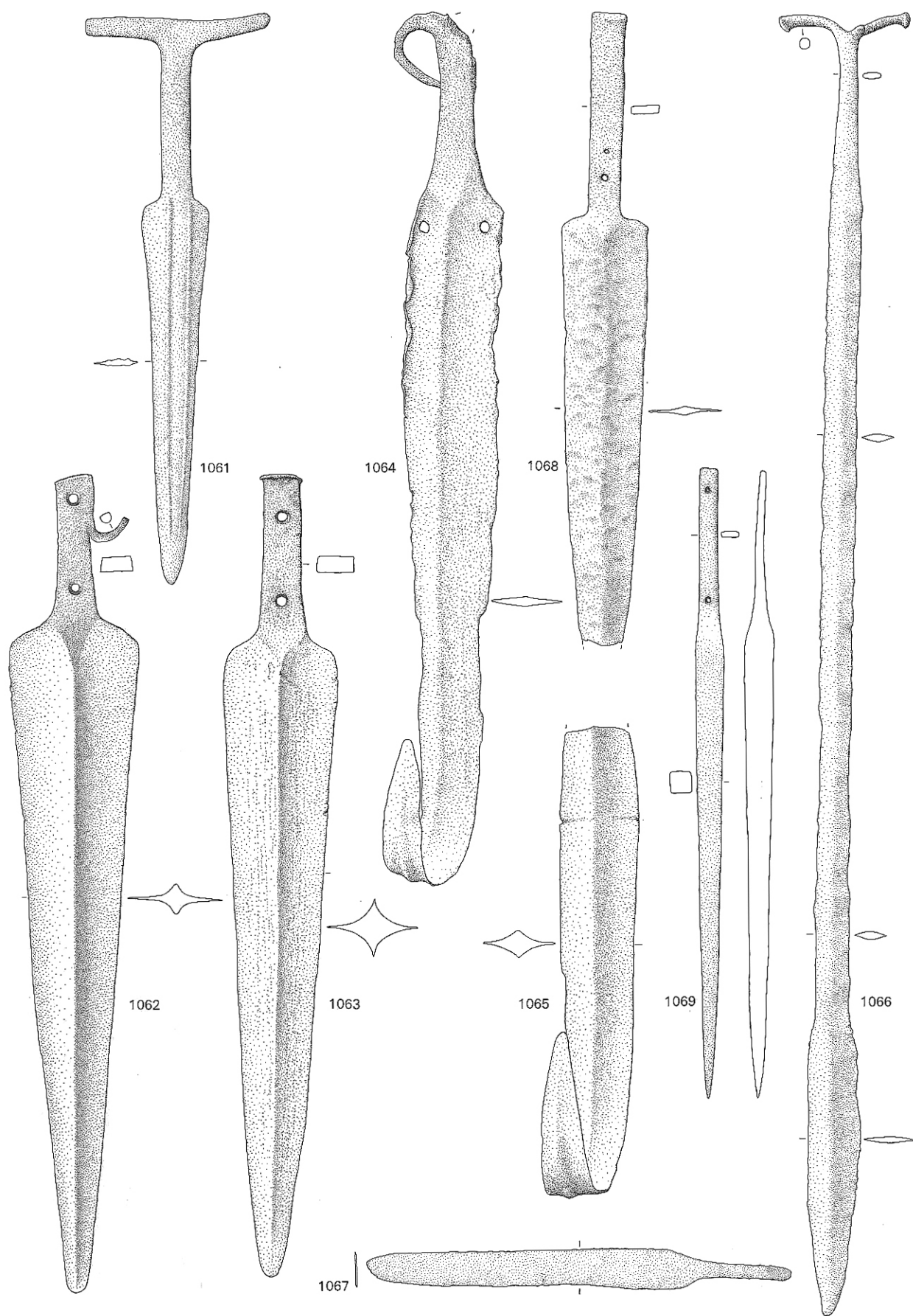
Scale 1 : 3



1055-1057.1060 Dist. Mehsana; 1058 Prov. unknown; 1059 Rewari.

Scale 1 : 3





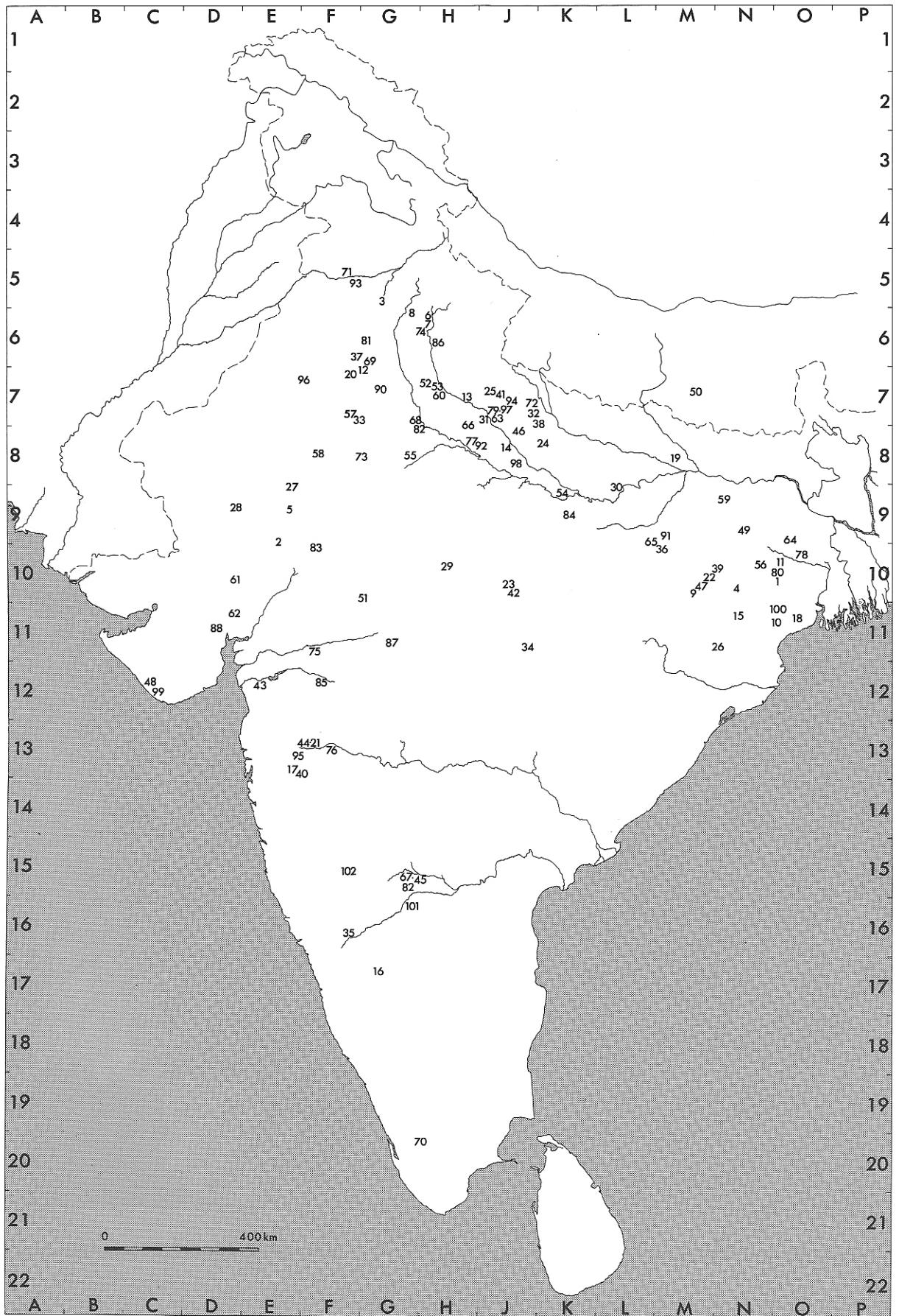
1061 Kankasa; 1062.1063 Hansi; 1064.1065 Shahabad area; 1066 Moongalaar Tea Estate; 1067 Narangabad; 1068.1069 Rewari.  
- (1061 after Sankalia; 1064 after Gupta).

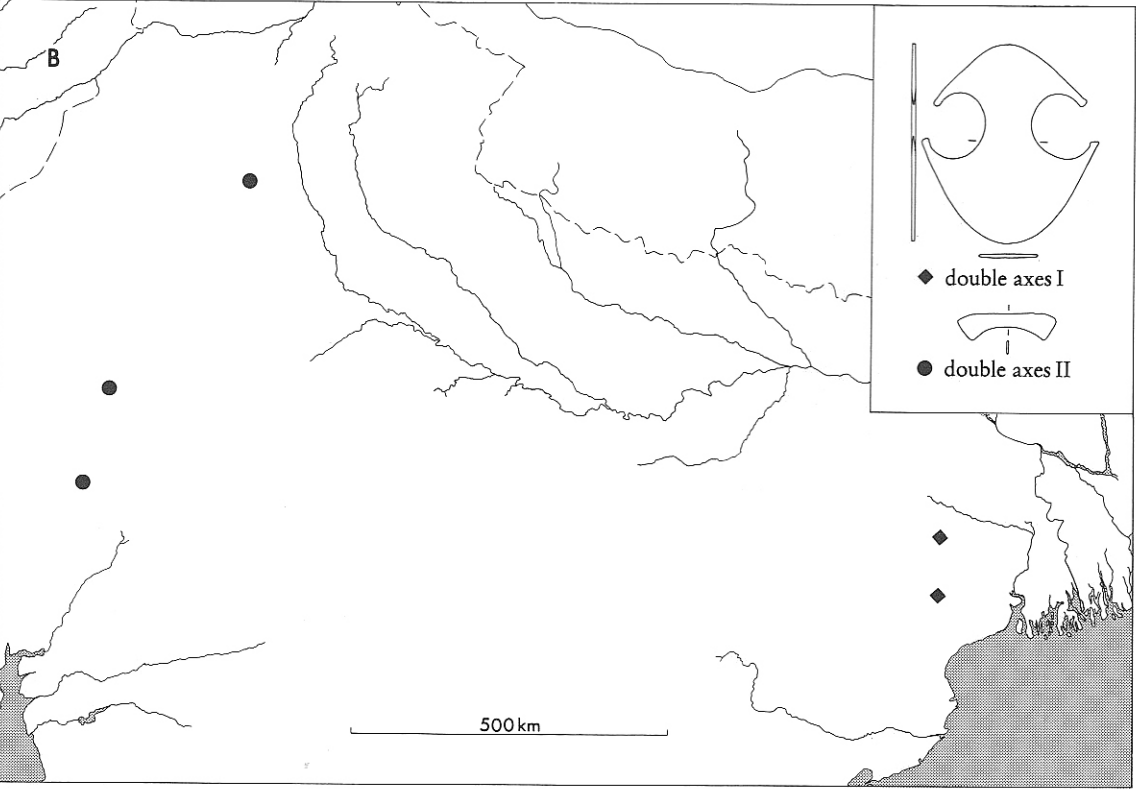
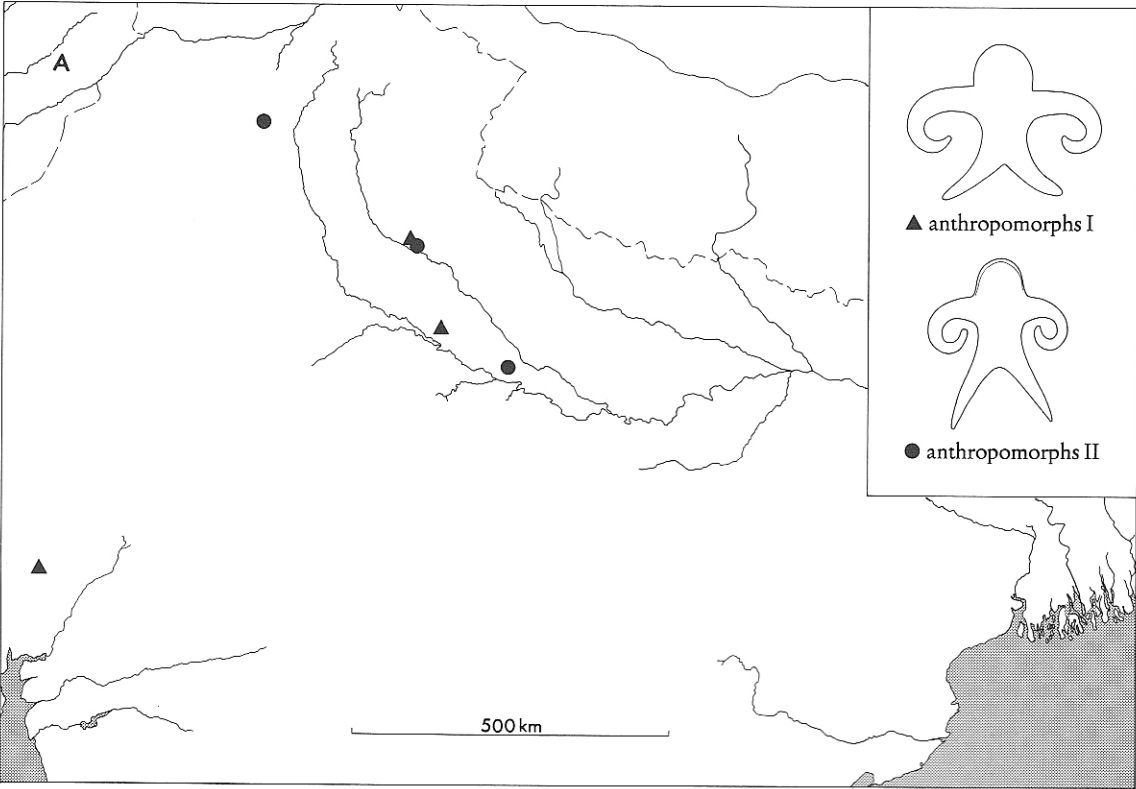
Scale 1 : 3



1070-1075.1082.1083 Rewari; 1076 Bartola; 1077 Bithur; 1078 Chota Nagpur; 1079 Kallur; 1080 Kosam; 1081 Nagar. - (1079 after Anon; 1081 after Joshi).

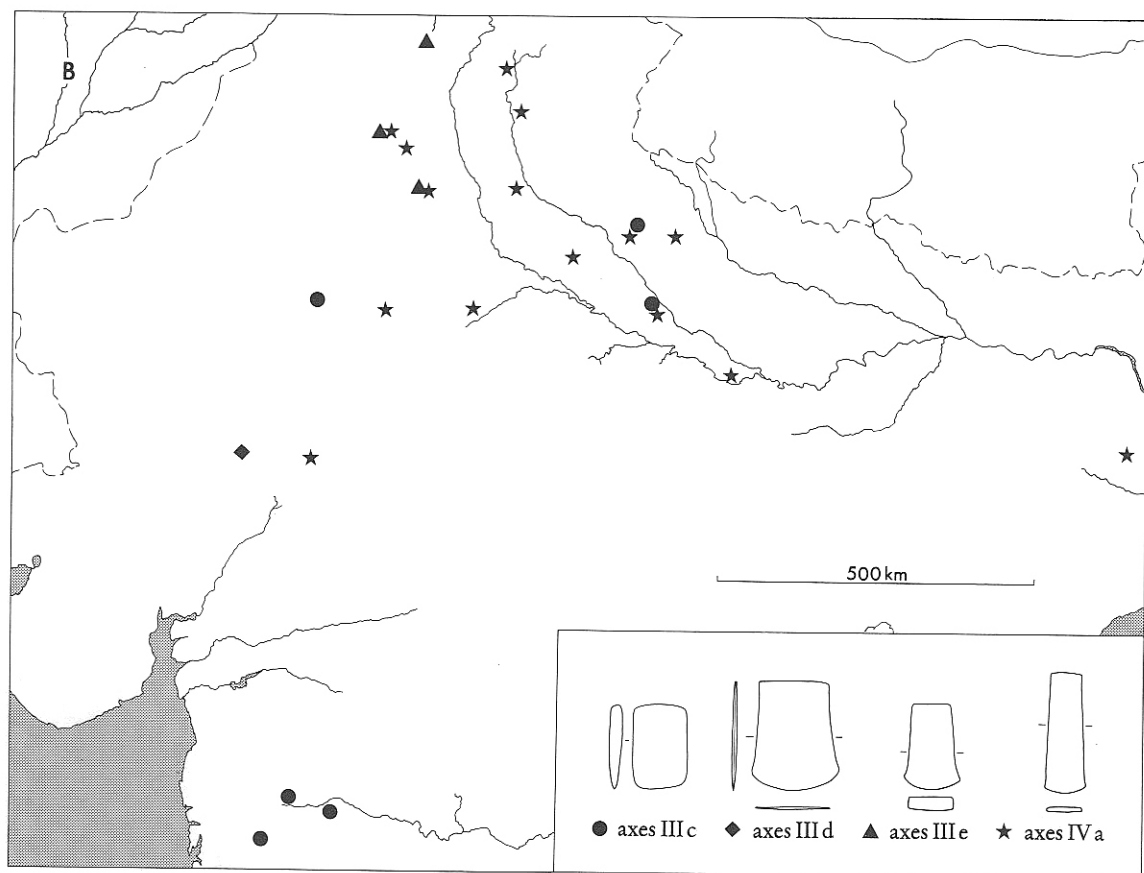
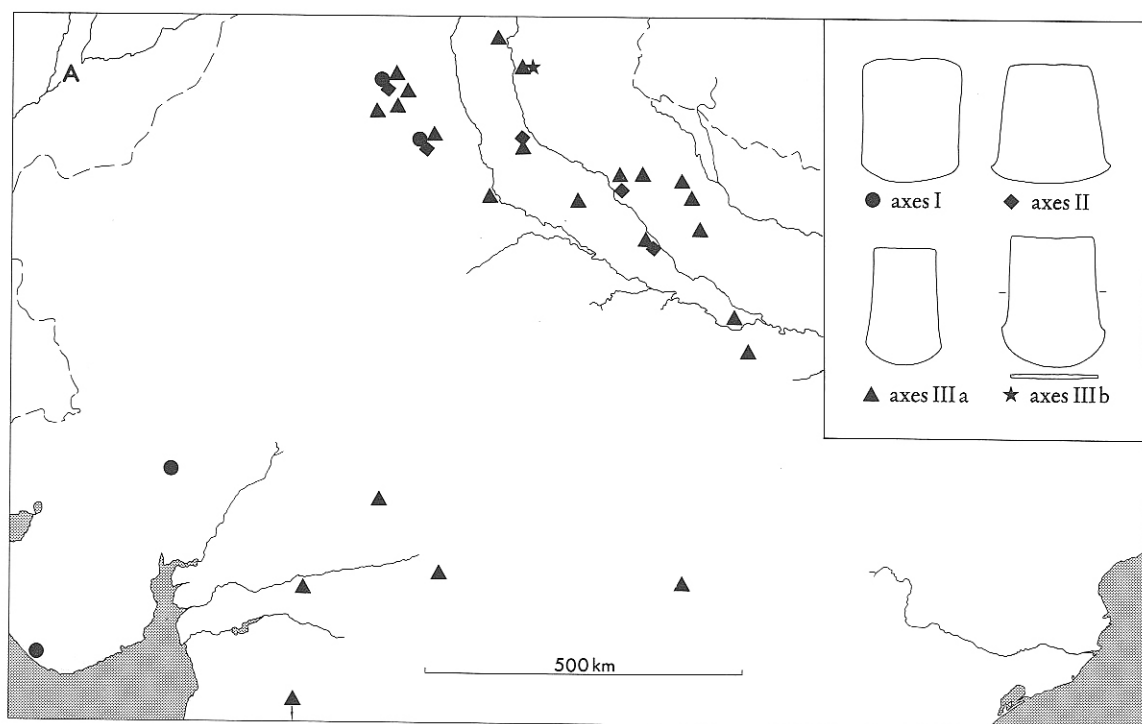
Scale 1 : 3





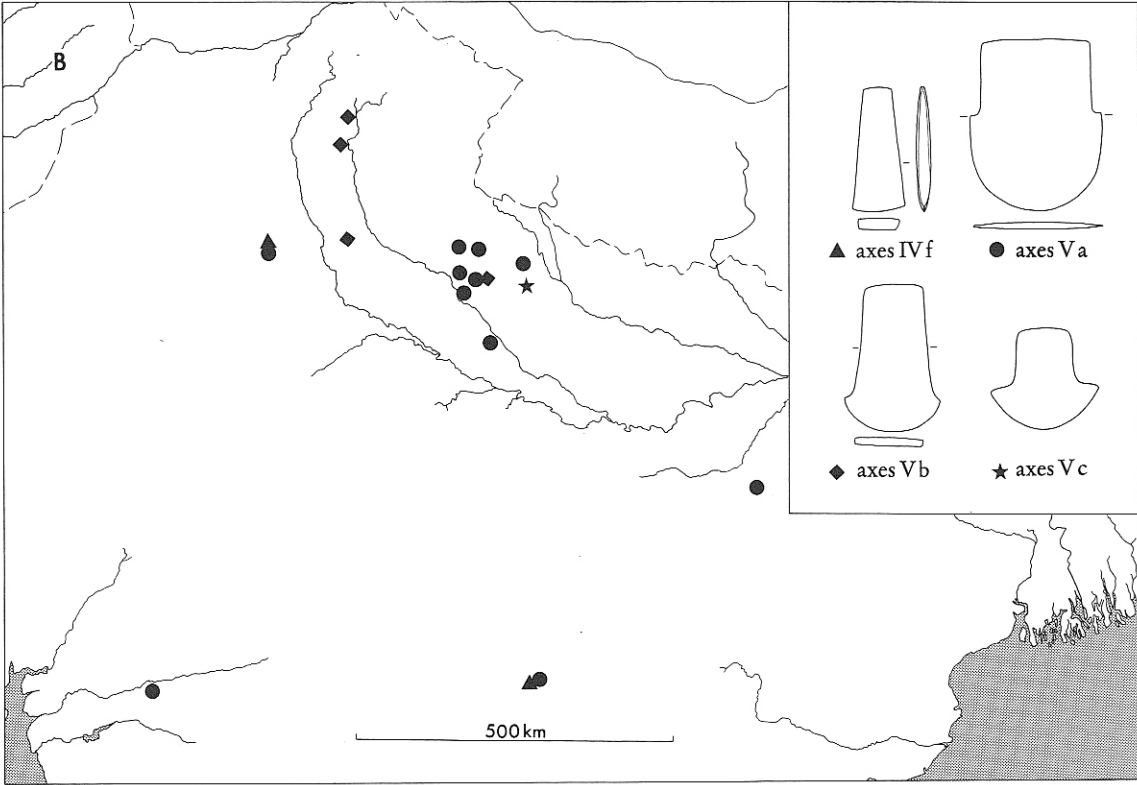
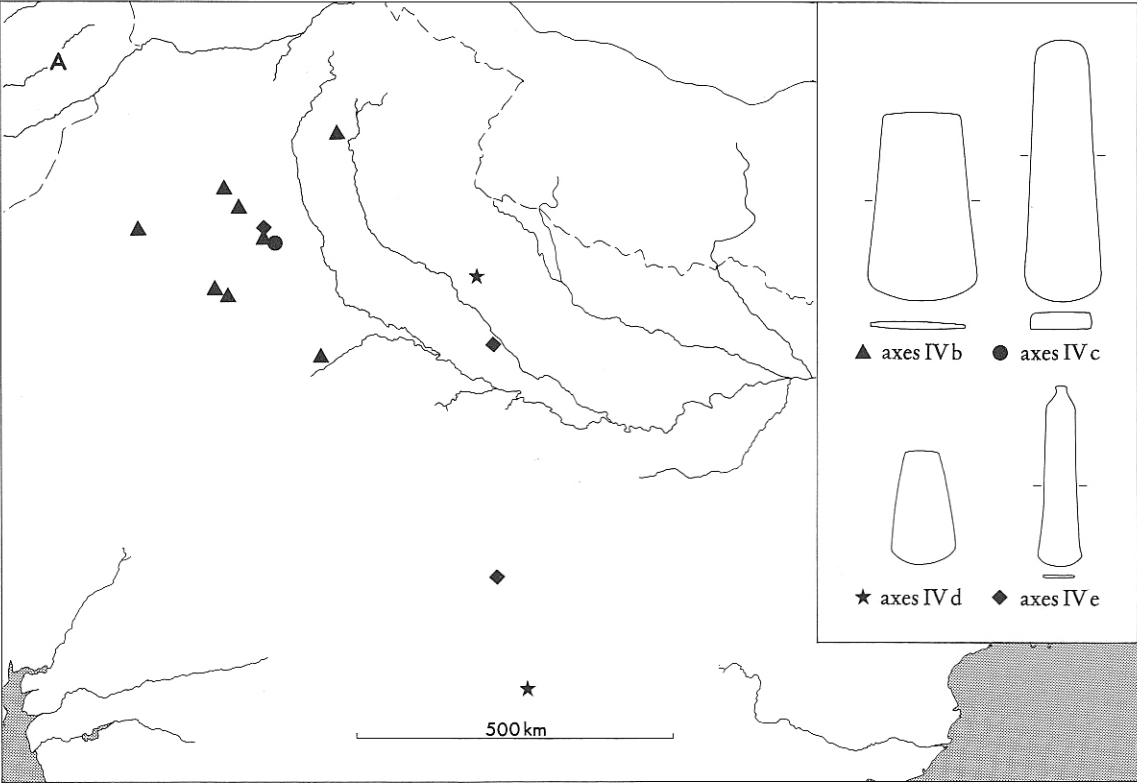
A Distribution of anthropomorphs (types I and II).

B Distribution of double axes (types I and II).



A Distribution of axes (types I, II, IIIa, IIIb).

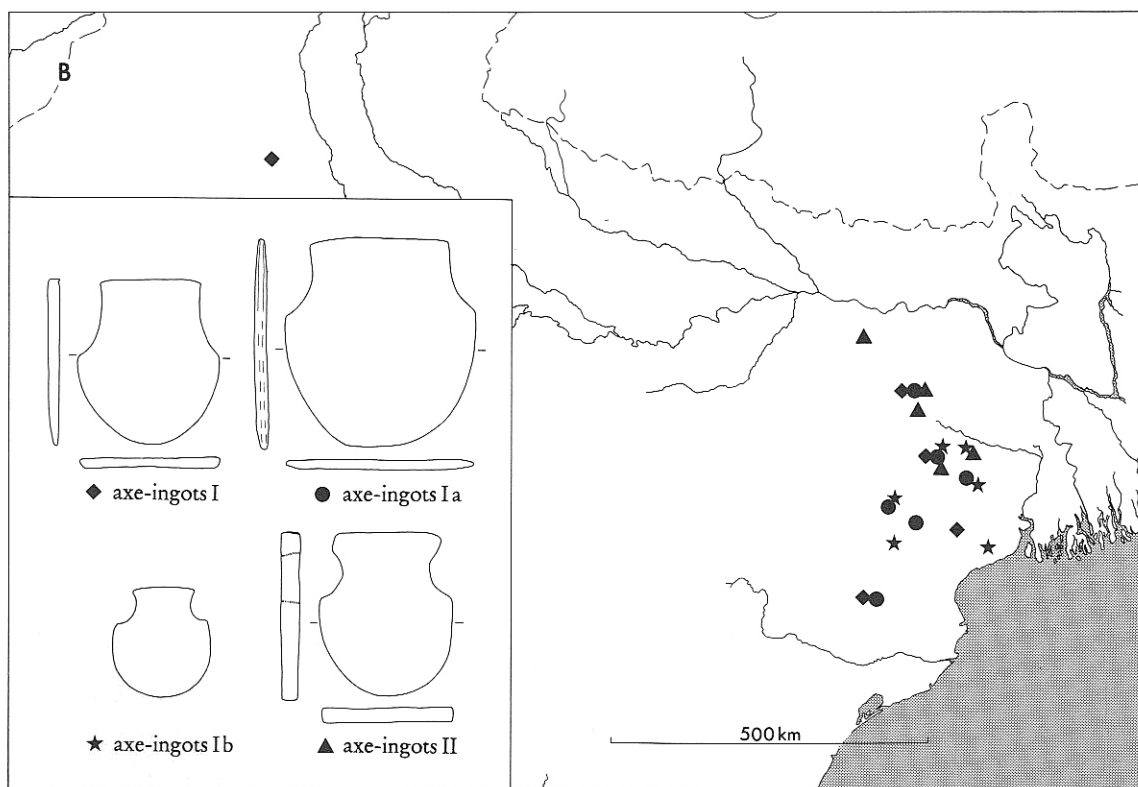
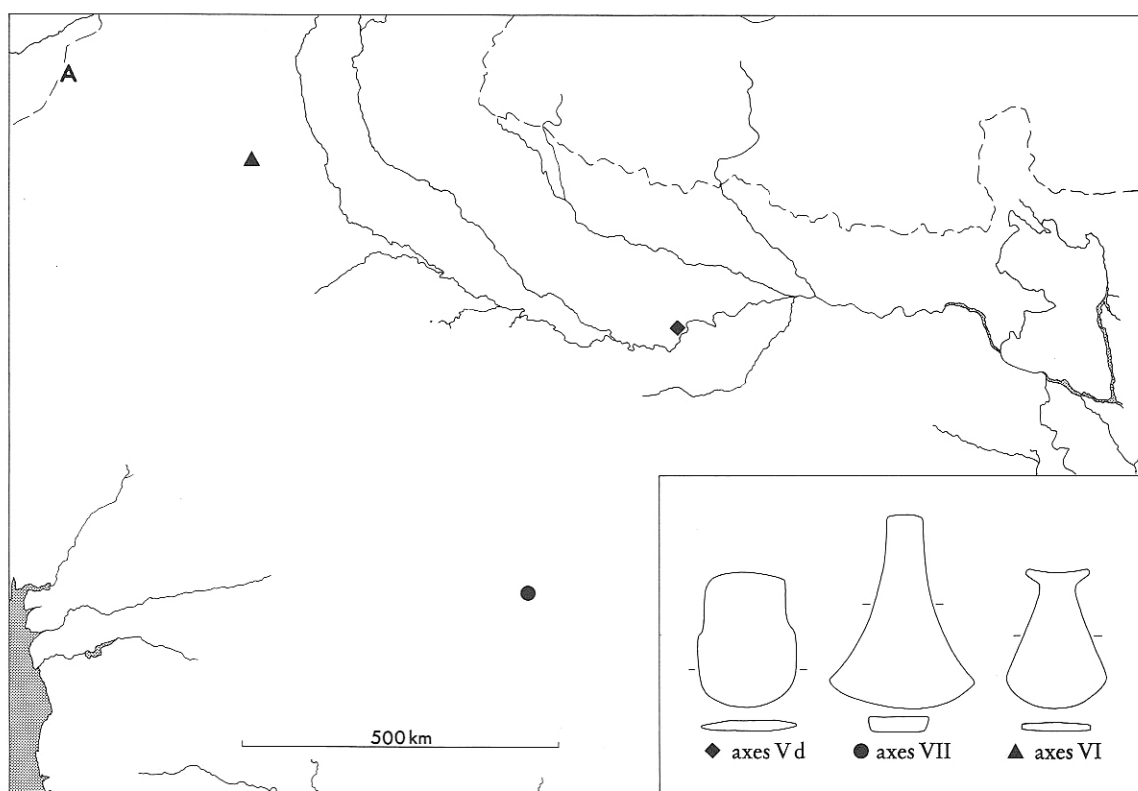
B Distribution of axes (types IIIc, III d, IIIe, IV a).



A Distribution of axes (types IVb, IVc, IVd, IVe).

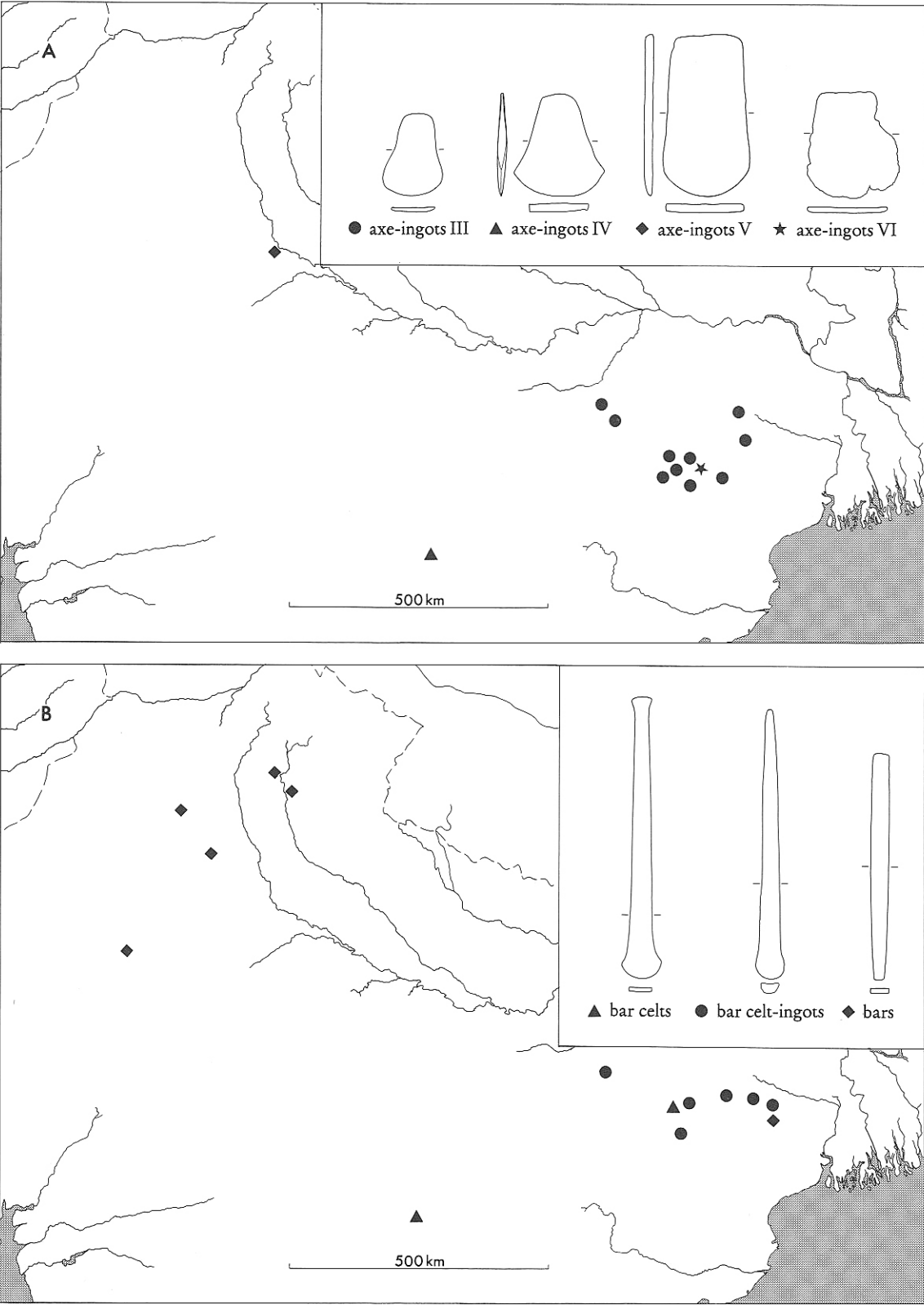
B Distribution of axes (types IVf, Va, Vb, Vc).





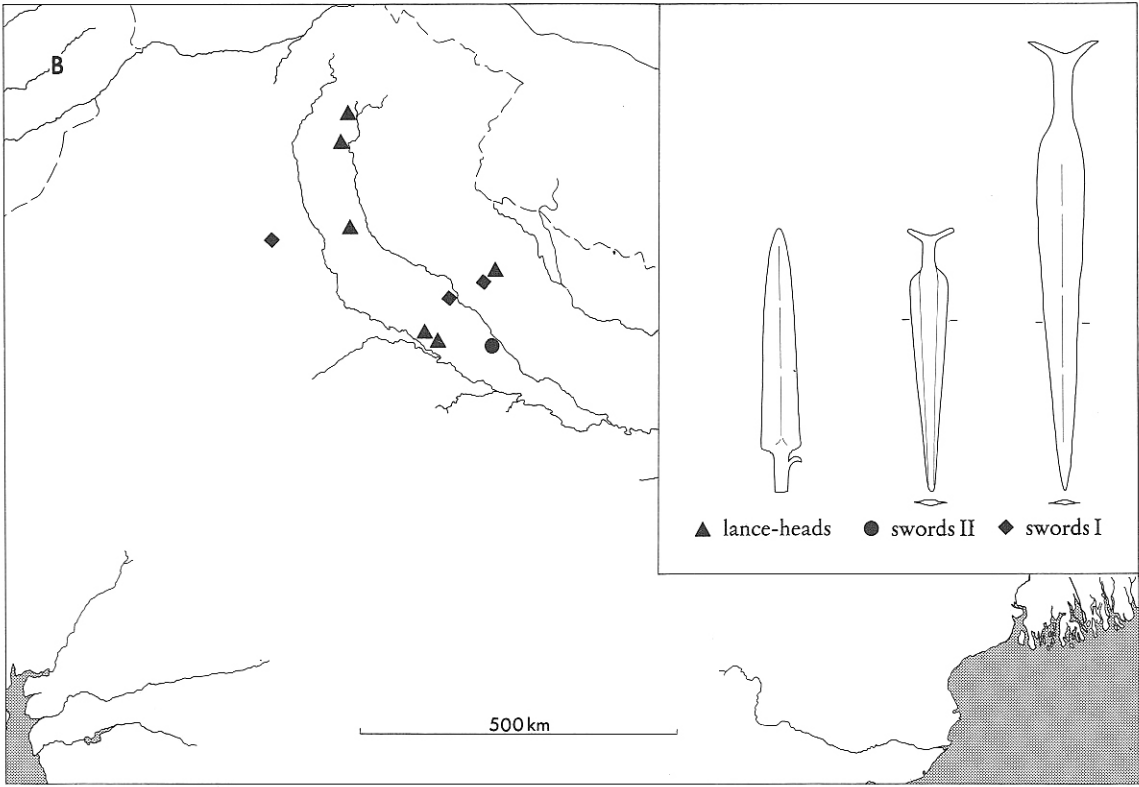
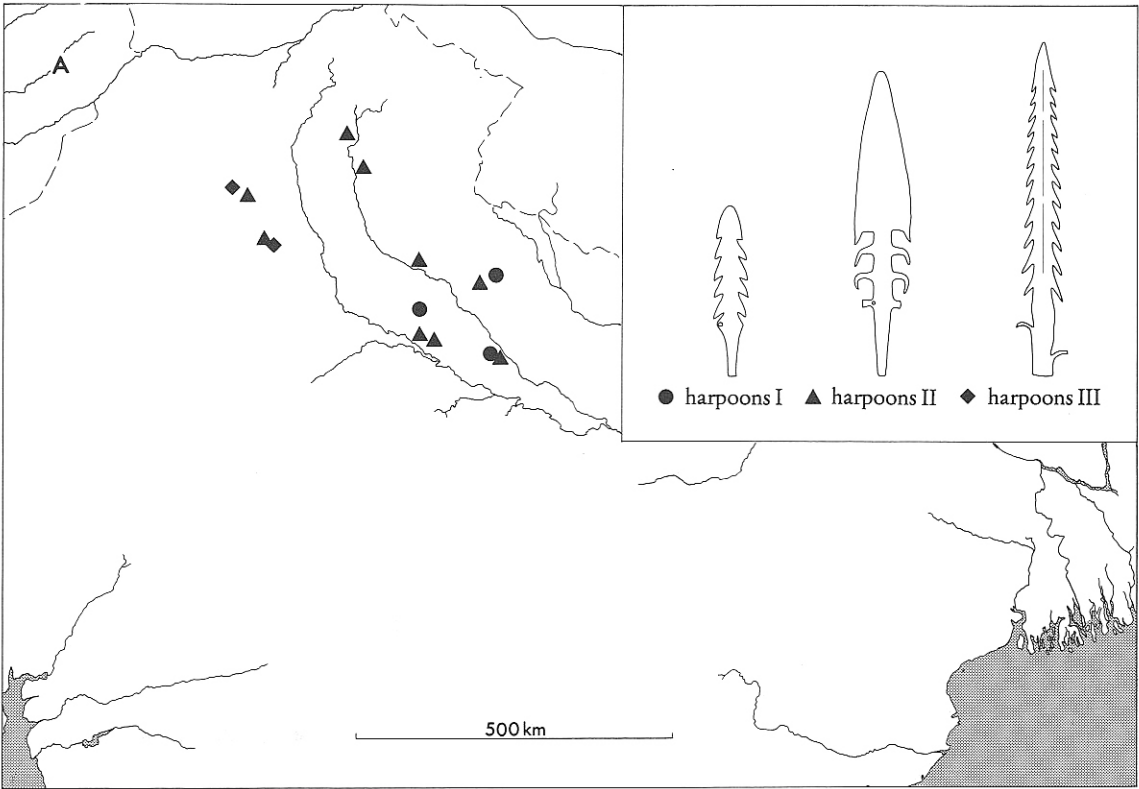
A Distribution of axes (types Vd, VI, VII).

B Distribution of axe-ingots (types I, Ia, Ib, II).



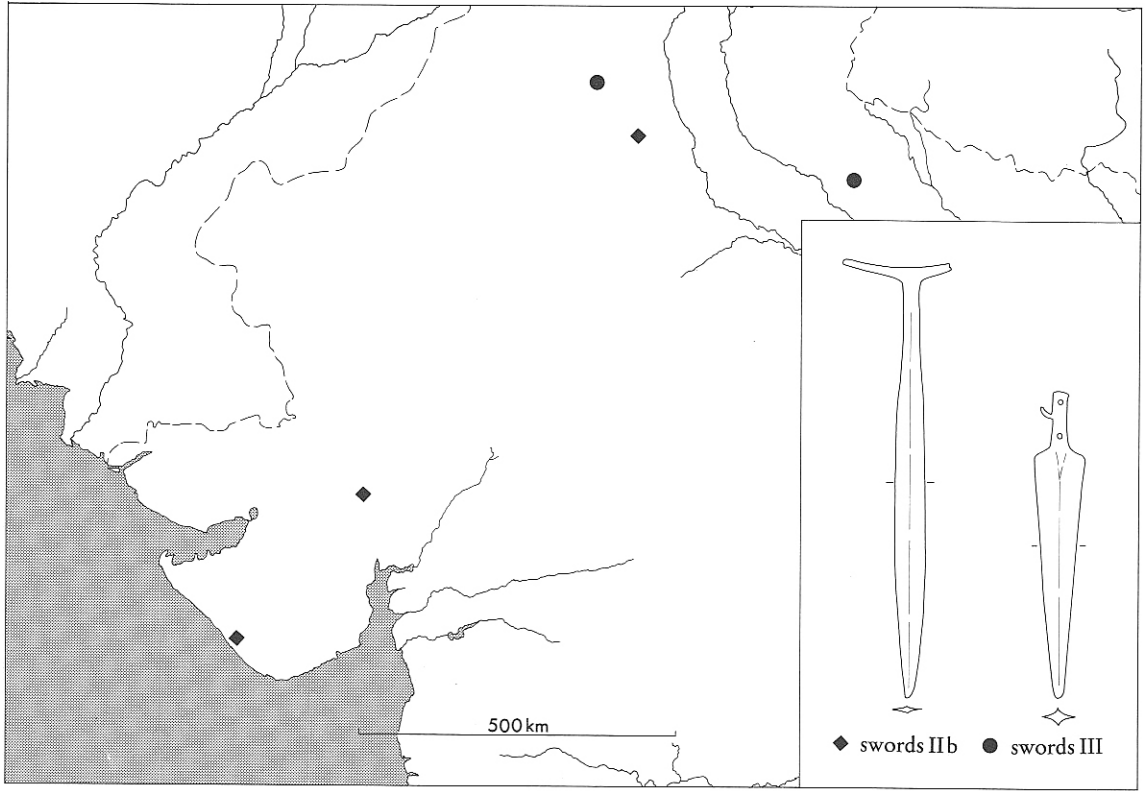
A Distribution of axe-ingots (types III, IV, V, VI).

B Distribution of bars, bar celts, bar celt-ingots.



A Distribution of harpoons (types I, II and III).

B Distribution of lance-heads, swords (types I and II).



Distribution of swords (types IIb and III).

Important findspots of metal objects (see Plate 101).

- |                |                      |                          |
|----------------|----------------------|--------------------------|
| 1 Aguibani     | 35 Hallur            | 69 Mitathal              |
| 2 Ahar         | 36 Hami              | 70 Moongalaar Tea Estate |
| 3 Ambala       | 37 Hansi             | 71 Nagar                 |
| 4 Andhari      | 38 Hardi             | 72 Nakrahiya             |
| 5 Bagor        | 39 Harra Chowra Darh | 73 Nandalapura           |
| 6 Bahadarabad  | 40 Inamgaon          | 74 Nasirpur              |
| 7 Baharia      | 41 Indilapur         | 75 Navdatoli             |
| 8 Bargaon      | 42 Jabalpur          | 76 Nevasa                |
| 9 Bartola      | 43 Jokha             | 77 Niorai                |
| 10 Bhagra Pir  | 44 Jorwe             | 78 Pandu Rajar Dhibi     |
| 11 Bhaktabundh | 45 Kallur            | 79 Pariar                |
| 12 Bhiwani     | 46 Kamalpur          | 80 Parihati              |
| 13 Bisauli     | 47 Kamdara           | 81 Pauli                 |
| 14 Bithur      | 48 Kankasa           | 82 Piklihal              |
| 15 Borodanga   | 49 Karharbari        | 83 Pind                  |
| 16 Brahmagiri  | 50 Katmandu valley   | 84 Pondi                 |
| 17 Chandoli    | 51 Kayatha           | 85 Prakash               |
| 18 Chatla      | 52 Khera Manpur      | 86 Rajpur Parsu          |
| 19 Chirand     | 53 Kiratpur          | 87 Ramjipura             |
| 20 Dadari      | 54 Kosam             | 88 Rangpur               |
| 21 Daimabad    | 55 Kota              | 89 Resgavaon             |
| 22 Dargama     | 56 Kulgara           | 90 Rewari                |
| 23 Debakia     | 57 Kulhade ka Johade | 91 Saguni                |
| 24 Deoti       | 58 Kurada            | 92 Saipai Lichchwai      |
| 25 Dhaka       | 59 Kushaya           | 93 Sanghol               |
| 26 Dunria      | 60 Lal Qila          | 94 Sarthauli             |
| 27 Ekalsingha  | 61 Langnaji          | 95 Sastevadi             |
| 28 Elana       | 62 Lothal            | 96 Saunia                |
| 29 Eran        | 63 Madnapur          | 97 Shahabad              |
| 30 Etawah      | 64 Mahisadal         | 98 Sheorajpur            |
| 31 Fathgarh    | 65 Mahuadanr         | 99 Somnath               |
| 32 Gandhauri   | 66 Mainpuri          | 100 Tamajuri             |
| 33 Ganeshwar   | 67 Maski             | 101 Tekkalakota          |
| 34 Gungeria    | 68 Mathura           | 102 Terdal               |